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POST CLOSURE ENVIRONMENTAL STATUS REPORT

For

HOPKINTON LANDFILL PHASE II

STUBTOWN ROAD

HOPKINTON, RHODE ISLAND

DECEMBER 2019

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HOPKINTON LANDFILL PHASE II

I. INTRODUCTION

A. PURPOSE

The purpose of this report is to present the findings and recommendations resulting from the post closer environmental monitoring that was carried out by Hoffman Engineering, Inc. (HEI) in coordination with Crossman Engineering (CE) in June and September 2019 at the former (capped) Phase II Landfill at the end of Stubtown Road in Hopkinton, Rhode Island. A Site Locus Map has been provided as Figure 1 in Appendix A. This monitoring work was conducted in general accordance with procedures for Post Closure Environmental Monitoring.

B. SITE HISTORY

On July 7, 2000, the Town of Hopkinton provided to the Rhode Island Department of Environmental Management (RIDEM) Office of Waste Management certification that the Phase II Landfill had been closed in accordance with the Closure Plan approved by RIDEM in 1994, and in 2019, the Town of Hopkinton contacted RIDEM to asses the steps necessary to place solar panels on the landfill in compliance with State Solid Waste Regulations. In reply, RIDEM issued a letter dated March 19, 2019 which outlined recommended steps and also identified issues irrespective of the future use. Crossman Engineering, in association with Hoffman Engineering, were retained to identify and address the current compliance issues.

C. SCOPE OF WORK

1. ACTIONS NECESSARY TO KEEP SITE IN COMPLIANCE

In the March 19, 2019 letter to Mr. James Lamphere, Hopkinton Town Planner, RIDEM transmitted the following list of actions necessary to bring and/or keep the Phase II landfill in compliance with RIDEM's Solid Waste Regulations 1 and 2 (Regulations). The RIDEM recommended actions are summarized below.

a. Removal of surface debris and/or improvement of signage and fencing to minimize exposure of the public to waste in and around the landfill.

b. Repairs and Maintenance

   i. Repair damage to cap from erosion. (Refer to Sections III and V, and the Site Improvement Plan in Appendix 5 of this report)

   ii. Repair stormwater control structures. (Refer to Section III and V of this report)

   iii. Repair and secure ground water monitoring wells.

iv. Remove trees and shrubs. (Refer to Sections III and V of this report.)

c. Semi-annual groundwater monitoring should be restarted as soon as possible in accordance with approved plan. (Refer to Section IIA of this report.)

d. Annual gas monitoring to ensure that methane levels do not exceed 25% LEL at property boundaries. (Refer to Section IIC of this report.)

e. Annual Inspections should be performed on the cap to ensure compliance with Regulations and approved plans. (Refer to Section V of this report.)

f. An evaluation of the surface water impact of any discharges from the landfill. (Refer to Section IIB of this report)

g. Filing of an Environmental Land Use Restriction (ELUR) with the Town to limit the future use of the property. (Refer to Appendix 4 of this report)

II. ENVIRONMENNTAL MONITORING

A. GROUNDWATER QUALITY MONITORING

1. PREVIOUS GROUNDWATER MONITORING RESULTS

Based upon available RIDEM files, groundwater monitoring was last conducted in June of 2001. The results of the current and previous testing data have been incorporated into Table 1 in Appendix 2.

During the previous groundwater monitoring round, there four volatile organic compounds (VOCs) identified. Acetone was detected in the samples from MW-5 and MW-7, chlorobenzene was detected in the sample from MW-7, chloroethane was detected in the sample from MW-7 and toluene was detected in the sample from MW-5. All detected VOCs were below the RI Department of Environment's GA Groundwater Quality Objective (GA Objective). Four inorganic analytes were also detected in groundwater samples. Barium and cadmium were detected in groundwater samples collected MW-5, MW-6 and MW-7, lead was detected in groundwater samples collected from MW-5 and MW-6 and zinc was detected in all samples collected from all four locations. Please note that both cadmium and lead exceeded the MCL in samples collected from MW-5 and MW-6. Cadmium also exceeded the MCL in the sample collected from MW-7. Inorganic results may be elevated due to the presence of sediments in the collected samples. Note, as discussed below, HEI conducted the current round of sampling employing the USEPA Low Stress Low Flow Protocols

2. GROUNDWATER SAMPLING AND ANALYSIS

The current round of groundwater sampling involved the collection of groundwater samples from the four groundwater monitoring wells located around the Phase II landfill. These locations are depicted on Figure 2 in Appendix 1. All samples were analyzed for Appendix A parameters (detection monitoring), as specified in Rule

2.1.03 of the RIDEM regulations. Initially only two (2) of the locations were found and as such, two (2) of the samples were collected on June 26, 2019, whereas the second two (2) were collected on September 3, 2019.

3. SAMPLE COLLECTION METHODOLOGY

Static Water level readings were collected from each monitoring well prior to purging the monitoring well. The monitoring wells were purged using EPA's Low Stress Low Flow Protocol using a peristaltic pump. Dedicated tubing was utilized for each of the monitoring wells. This low flow procedure is designed to minimize the silt within the sample which can skew the metals results artificially high. The turbidity is monitored during the sampling, as well as other filed parameters, until the readings have stabilized and the turbidity is consistently low (e.g. 20 NTU).

Following stabilization, groundwater samples were collected for EPA Method 8260 Volatile Organic Compounds and 15 solid waste metals compound.

Samples were collected into laboratory prepared bottles, placed on ice and transported under a chain-of-custody to RI Analytical Laboratories, Inc. of Warwick, Rhode Island for analytical testing.

4. GROUNDWATER QUALITY MONITORING RESULTS

A copy of the Certificate of Analysis and chain-of-custody for the current monitoring round is provided in Appendix 3 of this report.

Table 1 in Appendix 2 provides a summary of analytical results. A review of the table shows that a total of four (4) target analytes were detected during this sampling round. One (1) of the seven (7) was an inorganic analyte (lead) and three (3) were volatile organic compounds (VOCs); chlorobenzene, chloroethane and chloromethane. All of these results were below the RI Department of Environment's GA Groundwater Quality Objective.

B. SURFACE WATER QUALITY MONITORING

1. SAMPLE COLLECTION AND METHOLOGY

On June 26, 2019 HEI collected two surface water samples from areas of apparent runoff of the Phase II Landfill. These two locations are shown on Figure 2 in Appendix 1. The areas of runoff were in storm water management trenches that were constructed during the capping of the landfill. These storm water trenches have silted from erosion due to runoff. The samples were placed in laboratory prepared bottles and analyzed for RIDEM Appendix A Landfill metals and VOCs as well as total suspended solids and total solids.

2. SURFACE WATER MONITORING RESULTS

The results are summarized in Table 2, Appendix 2, and indicate no exceedances of RIDEM Ambient Water Quality Criteria for Human Health based on consumption of

water and or aquatic Organisms. The two VOCs detected, Acetone and Chloromethane are typical laboratory artifacts (i.e., Contaminants) and not indicative of sampling contaminants.

C. GAS MONITORING

1. SAMPLE COLLECTION AND METHODOLOGY

Landfill gas monitoring was conducted by HEI on June 27, 2019.

HEI traversed the landfill to monitor the existing gooseneck vents that were installed as part of the landfill capping process. It should be noted that based on available plans, there are no perimeter gas monitoring wells/points. During this monitoring the GPS locations were recorded which allowed HEI to denote each location on the recent topographic survey completed by Crossman Engineering, Inc. These locations are shown on Figure 3 in Appendix 1.

In order to monitor Lower Explosive Limit (LEL), Methane, and Oxygen concentrations in each of the gooseneck locations, an RKI Instruments Eagle Model LEL Meter was utilized. An Ensorcon Inspector brand Hydrogen Sulfide meter was also utilized to measure Hydrogen Sulfide (H_2S). This meter records the level of hydrogen sulfide.

2. GAS MONITORING RESULTS

A summary of the monitoring results, provided in Table 3, indicated detectable Methane (LEL) percentages in monitoring probe locations LFG-1, LFG-6, and LFG-10. These levels however were all below the 25 percent LEL considered elevated by the RIDEM. Based on the detected readings, the RIDEM may require perimeter monitoring points be installed to hopefully demonstrate compliance with the <25% LEL at the edge of the property.

III. SITE EXISTING CONDITIONS INSPECTION

A. PLAN PREPARATION

1. SITE IMPROVEMENT PLAN

In September 2019, Crossman Engineering conducted a Class III topographic survey of the site. The manual field survey which used to create the Site Improvement Plan contained in Appendix No. 5 of this report.

B. ISSUES IDENTIFIED

At the time of the topographic survey, CE also conducted an inspection of the cap and identified the following issues:

1. Multiple areas of cap erosion. (Refer to Site Improvement Plan)
2. Accumulation of sand and silt in sediment basins and outlet pipes.
3. The establishment of several small trees and shrubs over the cap.

IV. CONCLUSIONS

A. ENVIRONMENTAL MONITORING

1. GROUNDWATER

The groundwater shows little or no impact from the subject landfill. Only slightly elevated level of metals and BOCs were detected in samples collected from onsite monitoring wells. Unlike the previously available round of sample data from 2001, all analytes were below the RIDEM GA groundwater quality objectives.

2. SURFACE WATER

Based on the two surface water samples, there does not appear to be adverse impact from the surface water run-off. However, the sedimentation trenches are full of sand and silt and should be rejuvenated by removing this material with continued inspection on an annual basis with maintenance as needed.

3. GAS

A summary of the monitoring results which are provided in Table 3 (Appendix 2) indicated detectable Methane (LEL) percentages in monitoring probe locations LFG-1, LFG-6, and LFG-10. These levels were all below the 25 percent LEL considered elevated by the RIDEM.

V. RECOMMENDATIONS

A. ENVIRONMENTAL MONITORING

The following actions are recommended to keep this site in compliance with regulations:

1. Continue semi-annual groundwater monitoring in accordance with approved closure plan.

2. Continue annual gas monitoring to ensure that methane levels do not exceed 25% LEL at property boundaries.

   a) Consider installing perimeter gas monitoring points to hopefully demonstrate compliance with the <25% LEL at the edge of the property.

3. Continue annual inspection of cap and repair as necessary.

B. SITE REPAIRS

The following actions have been proposed based on our 2019 site evaluation (Refer to Site Improvement Plan in Appendix 5.):

1. The sediment basins and their outlet pipes should be cleaned of accumulated sand and silt and continued to be inspected and cleaned as necessary on an annual basis.

2. Numerous sediment basins were not found in the field and should be reconstructed in accordance with the original Plans.

3. The areas of cap erosion identified on the Site Improvement Plan in Appendix 5 should be repaired and the cap continued to be inspected on an annual basis and repaired as necessary.

4. Remove trees and shrubs and repair any resulting damage to cap.

5. The cap should be mowed as part of routine maintenance to prevent large vegetation (e.g. shrubs and trees) greater than 1" in girth from growing to minimize the potential for root damage to cap.

6. Upgrade signage and fencing to minimize exposure of the public to waste in and around the landfill.

7. Gooseneck PVC methane, vents should be replaced as necessary due to sun and other degradation of the PVC.

C. ENVIRONMENTAL LAND USE RESTRICTION

A Draft ENVIRONMENTAL LAND USE AGREEMENT limiting the future land use of the property has been prepared to be filed with the Town of Hopkinton and is included in Appendix 4 of this report.

APPENDIX 1
FIGURES

HEI

HOFFMAN ENGINEERING, INC.
640 Ten Rod Rd.
North Kingstown, RI 02852

LOCUS MAP

HOPKINTON LANDFILL PHASE II

STUBTOWN ROAD
HOPKINTON, RHODE ISLAND

N

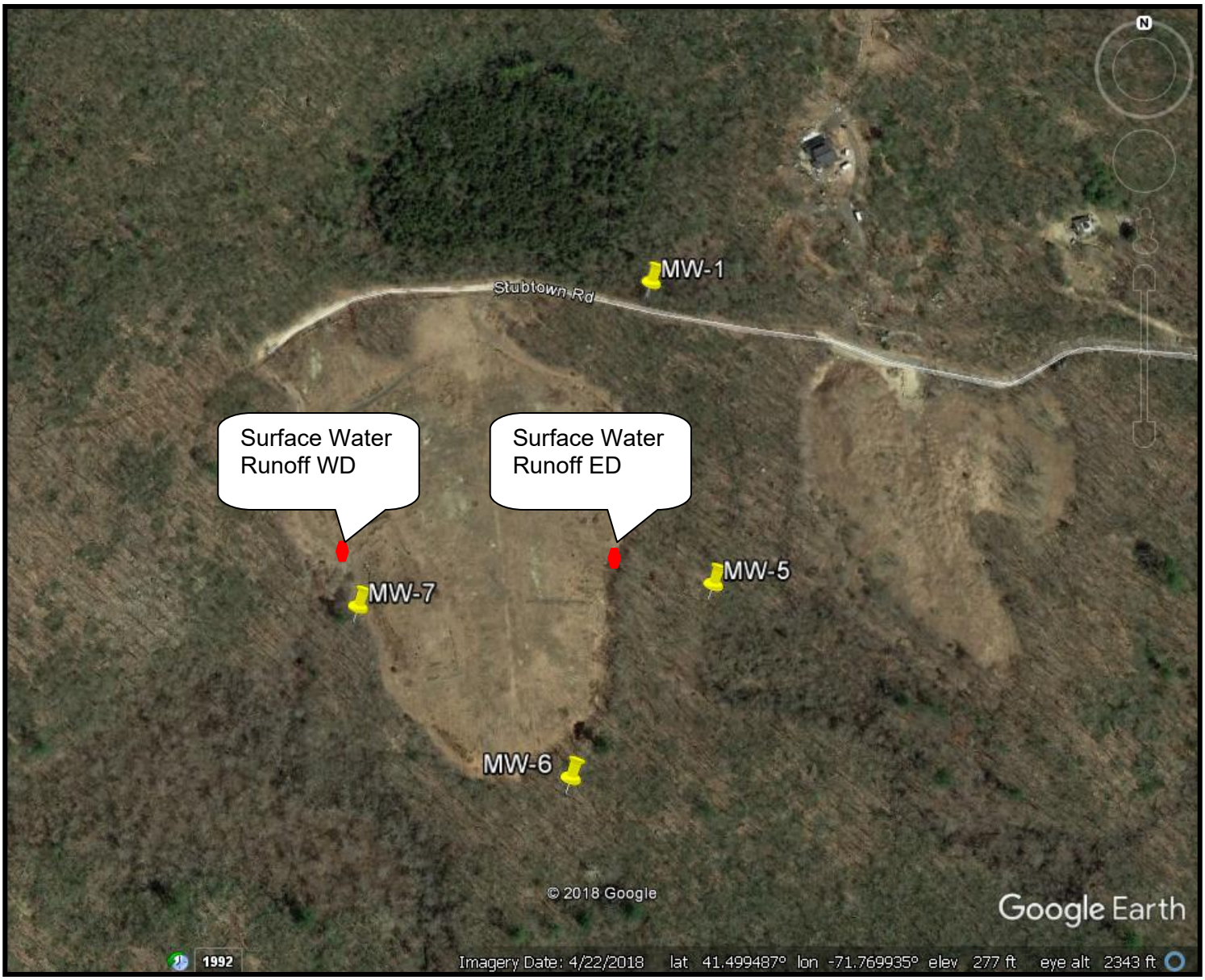
Date: 9-20-19

By: ALG

Base Map: USGS Map
Via ArcGis Database 2019

NTS

Figure 1



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HOFFMAN ENGINEERING, INC.
640 Ten Rod Rd.
North Kingstown, RI 02852

Site Plan
Phase II Landfill

Hopkinton Landfill
Stubtown Road
Hopkinton, Rhode Island

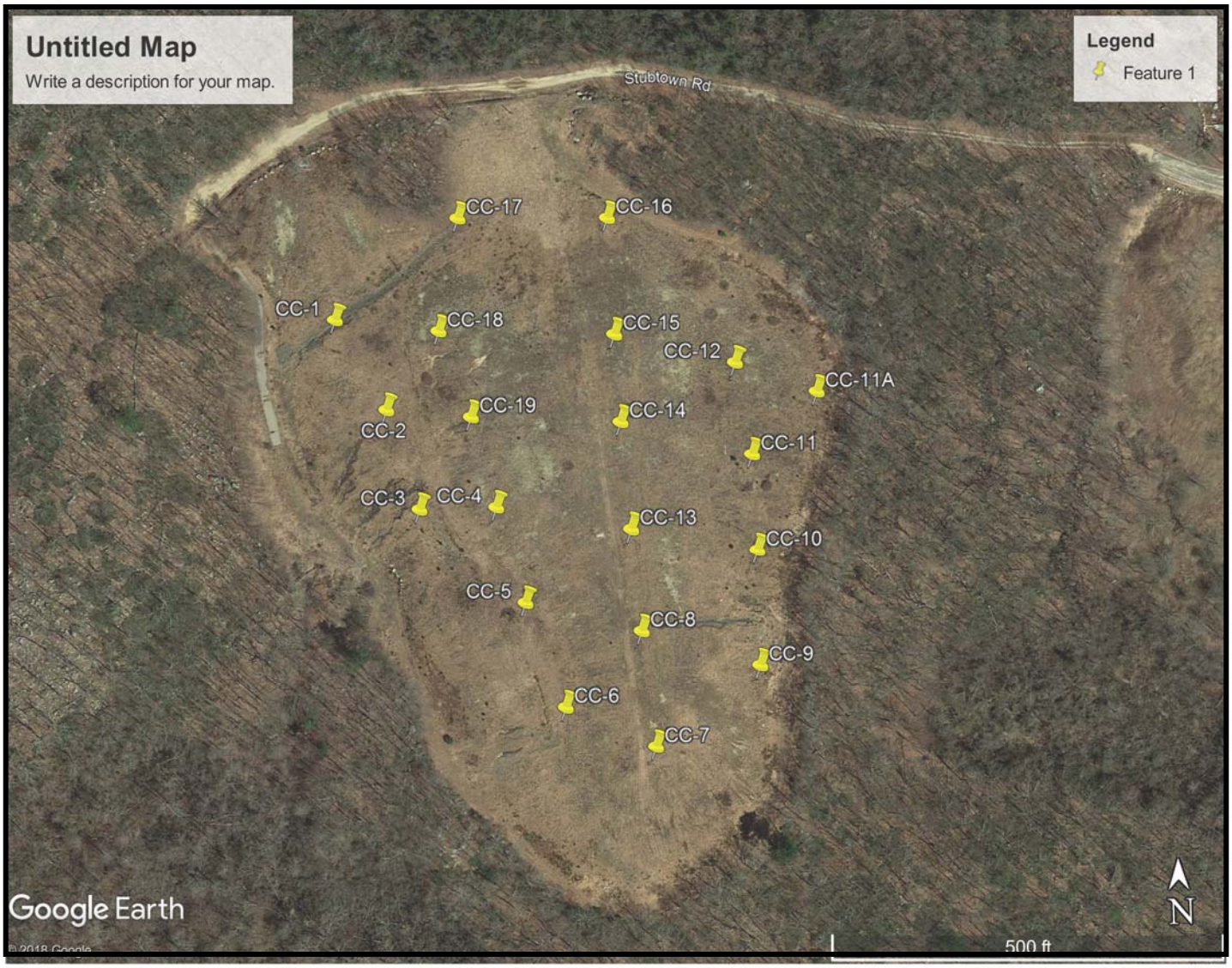
N

Date: 9-20-19

By: ALG

Base Map: Google Earth Image 2019

Figure 2



HEI

HOFFMAN ENGINEERING, INC.
640 Ten Rod Rd.
North Kingstown, RI 02852

Landfill Gas Monitoring Location Plan

Phase II
Hopkinton Landfill
Stubtown Road
Hopkinton, Rhode Island

Date: 9-20-19

By: ALG

Base Map: Google Earth Image 2019

Figure 3

APPENDIX 2
TABLES

TABLE 1
GROUNDWATER ANALYTICAL RESULTS HOPKINTON LANDFILL
POST CLOSURE

Sample Description	MW-1		MW-5		MW-6		MW-7		
Sample Date	6/19/2001	6/26/2019	6/19/2001	9/3/2019	6/19/2001	6/26/2019	6/19/2001	9/3/2019	
Parameter	**Sample Results**								**Regulatory Limit (mg/l)**
Volatile Organic Compounds (ug/l)									
Benzene	<1	<1	<1	<1	<1	<1	<1	<1	5.000
Bromochloromethane	<1	<1	<1	<1	<1	<1	<1	<1	NL
Bromodichloromethane	<1	<1	<1	<1	<1	<1	<1	<1	80.000
Bromoform	<1	<1	<1	<1	<1	<1	<1	<1	80.000
Bromomethane	<7	<7	<7	<7	1.2	<7	<5	<5	NL
Carbon Tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	5.000
Chlorobenzene	<1	<1	<1	<1	<1	<1	**2.4**	**2.1**	100.000
Chloroethane	<5	<5	<5	<5	<5	<5	**7.7**	**3.4**	NL
Chloroform	<1	<1	<1	<1	<1	<1	<1	<1	80.000
Chloromethane	<5	**10.5**	<5	<5	<5	**5.2**	<5	<5	NL
Dibromochloromethane	<1	<1	<1	<1	<1	<1	<1	<1	80.000
1,2-Dibromo-3-Chloropropane	<2	<2	<2	<2	<2	<2	<2	<2	0.200
1,2-Dibromoethane(EDB)	<1	<1	<1	<1	<1	<1	<1	<1	0.050
Dibromomethane	<2	<2	<2	<2	<2	<2	<2	<2	NL
1,2-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	600.000
1,4-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	75.000
1,1-Dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	NL
1,2-Dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	5.000
1,1-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	7.000
cis-1,2-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	70.000
trans-1,2-Dichloroethylene	<1	<1	<1	<1	<1	<1	<2	<2	100.000
1,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	5.000
Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	700.000
Methylene Chloride	<5	<5	<5	<5	<5	<5	<5	<5	5.000
Styrene	<1	<1	<1	<1	<1	<1	<1	<1	100.000
1,1,1,2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	NL
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	NL
Tetrachloroethene	<1	<1	<1	<1	<1	<1	<1	<1	5.000
Toluene	<1	<1	**3.3**	<1	<1	<1	<1	<1	1000.000
1,1,1-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	200.000
1,1,2-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	5.000
Trichloroethene	<1	<1	<1	<1	**1**	<1	<1	<1	5.000
Trichlorofluoromethane	<1	<1	<1	<1	<1	<1	<1	<1	NL
1,2,3-Trichloropropane	<1	<1	<1	<1	<1	<1	<2	<2	NL
Vinyl Chloride	<1	<1	<1	<1	<1	<1	<1	<1	2.000
o-Xylene	<1	<1	<1	<1	<1	<1	<1	<1	1000.000
m,p-Xylene	<1	<1	<1	<1	<1	<1	<1	<1	1000.000
Carbon Disulfide	<5	<5	<5	<5	<5	<5	<5	<5	NL
Iodomethane	<10	<10	<10	<10	<10	<10	<10	<10	NL
Acetone	<10	<10	**15**	<10	<10	<10	**7.2**	<10	NL
Acrylonitrile	<10	<10	<10	<10	<10	<10	<10	<10	NL
2-Butanone(MEK)	<10	<10	<10	<10	<10	<10	<10	<10	NL
4-Methyl-2-pentanone(MIBK)	<50	<50	<50	<10	<50	<10	<10	<10	NL
2-Hexanone	<10	<10	<10	<10	<10	<10	<10	<10	NL
trans-1,4-Dichloro-2-butene	<10	<10	<10	<10	<10	<10	<10	<10	NL
cis-1,3-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1	NL
trans-1,3-Dichloropropylene	<1	<1	<1	<1	<1	<1	<1	<1	NL
Vinyl Acetate	<50	<50	<50	<50	<50	<50	<50	<50	NL
Total Metals (mg/l)									
Antimony	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.006
Arsenic	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.050
Cadmium	<0.0002	<0.0002	**0.013**	<0.0002	**0.0033**	<0.0002	**0.016**	<0.0002	**0.005**
Lead	<0.001	<0.001	**0.035**	<0.001	**0.15**	**0.011**	<0.001	<0.001	**0.015 ***
Selenium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.050
Thallium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
Barium	<0.05	<0.05	**0.043**	<0.05	**0.024**	<0.05	**0.2**	<0.05	2.000
Beryllium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004
Chromium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.100
Cobalt	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NL
Copper	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NL
Nickel	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NL
Silver	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NL
Vanadium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NL
Zinc	**0.046**	<0.10	**0.077**	<0.10	**0.018**	<0.10	**0.044**	<0.10	NL

NL = No Regulatory Limit
Regulatory Limit refers to the USEPA Maximum Contaminant Level.
* Indicates the Regulatory Limit is a limit based on treatment technique (TT).
Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.

TABLE 2
SURFACE WATER ANALYTICAL RESULTS HOPKINTON LANDFILL
POST CLOSURE

Sample Description	Surface Water Runoff ED		Surface Water Runoff WD		
Sample Date	6/26/2019		6/26/2019		
Parameter	**Sample Results**	**Reporting Limits**	**Sample Results**	**Reporting Limits**	**Ambient Surface Water Quality Criteria (mg/l)**
Volatile Organic Compounds (ug/l)					
Benzene	ND	<1	ND	<1	22.000
Bromochloromethane	ND	<1	ND	<1	NL
Bromodichloromethane	ND	<1	ND	<1	NL
Bromoform	ND	<1	ND	<1	NL
Bromomethane	ND	<1	ND	<1	NL
Carbon Tetrachloride	ND	<1	ND	<1	2.300
Chlorobenzene	ND	<1	ND	<1	130.000
Chloroethane	ND	<1	ND	<1	NL
Chloroform	ND	<1	ND	<1	57.000
Chloromethane	**2.9**	<1	**2.5**	<1	NL
Dibromochloromethane	ND	<1	ND	<1	NL
1,2-Dibromo-3-Chloropropane	ND	<1	ND	<1	NL
1,2-Dibromoethane(EDB)	ND	<1	ND	<1	NL
Dibromomethane	ND	<1	ND	<1	NL
1,2-Dichlorobenzene	ND	<1	ND	<1	420.000
1,4-Dichlorobenzene	ND	<1	ND	<1	63.000
1,1-Dichloroethane	ND	<1	ND	<1	NL
1,2-Dichloroethane	ND	<1	ND	<1	NL
1,1-Dichloroethene	ND	<1	ND	<1	330.000
cis-1,2-Dichloroethene	ND	<1	ND	<1	NL
trans-1,2-Dichloroethylene	ND	<1	ND	<1	NL
1,2-Dichloropropane	ND	<1	ND	<1	5.000
Ethylbenzene	ND	<1	ND	<1	530.000
Methylene Chloride	ND	<1	ND	<1	NL
Styrene	ND	<1	ND	<1	NL
1,1,1,2-Tetrachloroethane	ND	<1	ND	<1	NL
1,1,2,2-Tetrachloroethane	ND	<1	ND	<1	NL
Tetrachloroethene	ND	<1	ND	<1	6.900
Toluene	ND	<1	ND	<1	1300.000
1,1,1-Trichloroethane	ND	<1	ND	<1	NL
1,1,2-Trichloroethane	ND	<1	ND	<1	5.900
Trichloroethene	ND	<1	ND	<1	25.000
Trichlorofluoromethane	ND	<1	ND	<1	NL
1,2,3-Trichloropropane	ND	<1	ND	<1	NL
Vinyl Chloride	ND	<1	ND	<1	0.025
o-Xylene	ND	<1	ND	<1	NL
m,p-Xylene	ND	<2	ND	<2	NL
Carbon Disulfide	ND	<1	ND	<1	NL
Iodomethane	ND	<1	ND	<1	NL
Acetone	ND	<5	**6.6**	<5	NL
Acrylonitrile	ND	<1	ND	<1	0.510
2-Butanone(MEK)	ND	<5	ND	<5	NL
4-Methyl-2-pentanone(MIBK)	ND	<5	ND	<5	NL
2-Hexanone	ND	<5	ND	<5	NL
trans-1,4-Dichloro-2-butene	ND	<1	ND	<1	NL
cis-1,3-Dichloropropene	ND	<1	ND	<1	NL
trans-1,3-Dichloropropylene	ND	<1	ND	<1	NL
Vinyl Acetate	ND	<1	ND	<1	NL
Total Metals (mg/l)					
Antimony	ND	<0.002	ND	<0.002	0.006
Arsenic	ND	<0.001	ND	<0.001	0.0002
Cadmium	ND	<0.0002	ND	<0.0002	NL
Lead	ND	<0.001	ND	<0.001	NL
Selenium	ND	<0.002	ND	<0.002	0.170
Thallium	ND	<0.001	ND	<0.001	0.000
Barium	ND	<0.05	ND	<0.05	NL
Beryllium	ND	<0.001	ND	<0.001	NL
Chromium	ND	<0.005	ND	<0.005	NL
Cobalt	ND	<0.010	ND	<0.010	NL
Copper	ND	<0.010	ND	<0.010	1.300
Nickel	ND	<0.010	ND	<0.010	0.610
Silver	ND	<0.020	ND	<0.020	NL
Vanadium	ND	<0.005	ND	<0.005	NL
Zinc	ND	<0.10	ND	<0.10	7.400
Total Suspended Solids	15	2	25	2	NL
Total Solids	76	10	140	10	NL

NL = No Regulatory Limit
Regulatory Limit refers to RIDEM Ambient Water Quality Criteria (Human Health Criteria).
Assume Hardness of 25 mg/L

TABLE 3
FIELD SCREENING
PASSIVE GAS SYSTEM
HOPKINTON LANDFILL
Hopkinton, RI

Location	Northing	Easting	Methane %LEL	Hydrogen Sulfide (PPM)	Oxygen %
CC-1	41° 29.992'	71° 46.315'	0	0	20.9
CC-2	41° 29.974'	71° 46.302'	7	0	13
CC-3	41° 29.954'	71° 46.294'	4	0	16.5
CC-4	41° 29.954'	71° 46.273'	0	0	20.9
CC-5	41° 29.935'	71° 46.266'	0	0	20.9
CC-6	41° 29.914'	71° 46.259'	0	0	18.4
CC-7	41° 29.906'	71° 46.232'	0	0	20.9
CC-8	41° 29.929'	71° 46.235'	0	0	20.9
CC-9	41° 29.921'	71° 46.203'	0	0	20.9
CC-10	41° 29.944'	71° 46.203'	0	0	20.9
CC-11	41° 29.963'	71° 46.204'	0	0	20.9
CC-11A	41° 29.975'	71° 46.186'	11	0	15.5
CC-12	41° 29.981'	71° 46.208'	0	0	20.9
CC-13	41° 29.949'	71° 46.237'	0	0	20.9
CC-14	41° 29.970'	71° 46.239'	0	0	20.9
CC-15	41° 29.987'	71° 46.240'	0	0	20.9
CC-16	41° 30.010'	71° 46.241'	0	0	20.9
CC-17	41° 30.011'	71° 46.281'	0	0	20.9
CC-18	41° 29.989'	71° 46.287'	0	0	20.9
CC-19	41° 29.972'	71° 46.279'	0	0	20.9

APPENDIX 3
CERTIFICATES OF ANALYSTS

R.I. ANALYTICAL
Specialists in Environmental Services

LABORATORY REPORT

Hoffman Engineering, Inc.
Attn: Robert Hoffman
640 Ten Rod Road
North Kingstown, RI 02852

Date Received: 6/28/2019
Date Reported: 7/25/2019
P.O. Number

Work Order #: 1906-12088
Project Name: PHASE II HOPKINTON LANDFILL

Enclosed are the analytical results and Chain of Custody for your project referenced above. The sample(s) were analyzed by our Warwick, RI laboratory unless noted otherwise. When applicable, indication of sample analysis at our Hudson, MA laboratory and/or subcontracted results are noted and subcontracted reports are enclosed in their entirety.

All samples were analyzed within the established guidelines of US EPA approved methods with all requirements met, unless otherwise noted at the end of a given sample's analytical results or in a case narrative.

The Detection Limit is defined as the lowest level that can be reliably achieved during routine laboratory conditions.

These results only pertain to the samples submitted for this Work Order # and this report shall not be reproduced except in its entirety.

We certify that the following results are true and accurate to the best of our knowledge. If you have questions or need further assistance, please contact our Customer Service Department.

Approved by:

Dawne E. Smart
Data Reporting Manager

Laboratory Certification Numbers (as applicable to sample's origin state):
Warwick RI * RI LAI00033, MA M-RI015, CT PH-0508 Hudson MA * M-MA1117, RI LAO00319

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1906-12088

Project Name: PHASE II HOPKINTON LANDFILL

Sample Number: 001
Sample Description: MW-1
Sample Type : GRAB
Sample Date / Time : 6/26/2019

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
Total Metals							
Antimony	<0.002	0.002	mg/l	SW-846 6020A	7/5/2019	18:58	AJD
Arsenic	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	18:58	AJD
Cadmium	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	18:58	AJD
Lead	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	18:58	AJD
Selenium	<0.002	0.002	mg/l	SW-846 6020A	7/5/2019	18:58	AJD
Thallium	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	18:58	AJD
Total Metals							
Barium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:29	DDP
Beryllium	<0.005	0.005	mg/l	SW-846 6010C	7/3/2019	16:29	DDP
Chromium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:29	DDP
Cobalt	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:29	DDP
Copper	<0.010	0.010	mg/l	SW-846 6010C	7/3/2019	16:29	DDP
Nickel	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:29	DDP
Silver	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:29	DDP
Vanadium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:29	DDP
Zinc	<0.10	0.10	mg/l	SW-846 6010C	7/3/2019	16:29	DDP
ICPMS Digestion (Total)				SW-846 3020A	7/5/2019	13:07	MEM
ICP Digestion				SW-846 3010A	7/3/2019	14:50	MEM
Volatile Organic Compounds	See Attached			SW-846 8260C	7/8/2019	17:26	*PA

*PA VOC's analyzed by Pace Analytical Services.

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1906-12088

Project Name: PHASE II HOPKINTON LANDFILL

Sample Number: 002
Sample Description: MW-6
Sample Type : GRAB
Sample Date / Time : 6/26/2019

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
Total Metals							
Antimony	<0.002	0.002	mg/l	SW-846 6020A	7/5/2019	19:02	AJD
Arsenic	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:02	AJD
Cadmium	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:02	AJD
Lead	0.011	0.001	mg/l	SW-846 6020A	7/5/2019	19:02	AJD
Selenium	<0.002	0.002	mg/l	SW-846 6020A	7/5/2019	19:02	AJD
Thallium	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:02	AJD
Total Metals							
Barium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:30	DDP
Beryllium	<0.005	0.005	mg/l	SW-846 6010C	7/3/2019	16:30	DDP
Chromium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:30	DDP
Cobalt	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:30	DDP
Copper	<0.010	0.010	mg/l	SW-846 6010C	7/3/2019	16:30	DDP
Nickel	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:30	DDP
Silver	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:30	DDP
Vanadium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:30	DDP
Zinc	<0.10	0.10	mg/l	SW-846 6010C	7/3/2019	16:30	DDP
ICPMS Digestion (Total)				SW-846 3020A	7/5/2019	13:07	MEM
ICP Digestion				SW-846 3010A	7/3/2019	14:50	MEM
Volatile Organic Compounds	See Attached			SW-846 8260C	7/8/2019	17:46	*PA

*PA VOC's analyzed by Pace Analytical Services.

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1906-12088

Project Name: PHASE II HOPKINTON LANDFILL

Sample Number: 003
Sample Description: SURFACE RUNOFF ED
Sample Type : GRAB
Sample Date / Time : 6/26/2019

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
Volatile Organic Compounds	See Attached			SW-846 8260C	7/8/2019	18:05	*PA
Total Suspended Solids	15	2.0	mg/l	SM2540D 2011	7/2/2019	21:18	DD
Total Solids	76	10	mg/l	SM2540B 18-21ed	7/2/2019	21:22	SNI
Total Metals							
Antimony	<0.002	0.002	mg/l	SW-846 6020A	7/5/2019	19:05	AJD
Arsenic	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:05	AJD
Cadmium	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:05	AJD
Lead	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:05	AJD
Selenium	<0.002	0.002	mg/l	SW-846 6020A	7/5/2019	19:05	AJD
Thallium	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:05	AJD
Total Metals							
Barium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:32	DDP
Beryllium	<0.005	0.005	mg/l	SW-846 6010C	7/3/2019	16:32	DDP
Chromium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:32	DDP
Cobalt	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:32	DDP
Copper	<0.010	0.010	mg/l	SW-846 6010C	7/3/2019	16:32	DDP
Nickel	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:32	DDP
Silver	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:32	DDP
Vanadium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:32	DDP
Zinc	<0.10	0.10	mg/l	SW-846 6010C	7/3/2019	16:32	DDP
ICPMS Digestion (Total)				SW-846 3020A	7/5/2019	13:07	MEM
ICP Digestion				SW-846 3010A	7/3/2019	14:50	MEM

*PA VOC's analyzed by Pace Analytical Services.

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1906-12088

Project Name: PHASE II HOPKINTON LANDFILL

Sample Number: 004
Sample Description: SURFACE RUNOFF WD
Sample Type : GRAB
Sample Date / Time : 6/26/2019

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
Volatile Organic Compounds	See Attached			SW-846 8260C	7/8/2019	18:28	*PA
Total Suspended Solids	25	2.0	mg/l	SM2540D 2011	7/2/2019	21:18	DD
Total Solids	140	10	mg/l	SM2540B 18-21ed	7/2/2019	21:22	SNI
Total Metals							
Antimony	<0.002	0.002	mg/l	SW-846 6020A	7/5/2019	19:13	AJD
Arsenic	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:13	AJD
Cadmium	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:13	AJD
Lead	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:13	AJD
Selenium	<0.002	0.002	mg/l	SW-846 6020A	7/5/2019	19:13	AJD
Thallium	<0.001	0.001	mg/l	SW-846 6020A	7/5/2019	19:13	AJD
Total Metals							
Barium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:34	DDP
Beryllium	<0.005	0.005	mg/l	SW-846 6010C	7/3/2019	16:34	DDP
Chromium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:34	DDP
Cobalt	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:34	DDP
Copper	<0.010	0.010	mg/l	SW-846 6010C	7/3/2019	16:34	DDP
Nickel	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:34	DDP
Silver	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:34	DDP
Vanadium	<0.050	0.050	mg/l	SW-846 6010C	7/3/2019	16:34	DDP
Zinc	<0.10	0.10	mg/l	SW-846 6010C	7/3/2019	16:34	DDP
ICPMS Digestion (Total)				SW-846 3020A	7/5/2019	13:07	MEM
ICP Digestion				SW-846 3010A	7/3/2019	14:50	MEM

*PA VOC's analyzed by Pace Analytical Services.

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1906-12088

Project Name: PHASE II HOPKINTON LANDFILL

Quality Control Sample Report

-Method Blanks-

Parameter	Units	Results	Date Analyzed
Total Suspended Solids	mg/l	<2.0	7/2/2019
Total Solids	mg/l	<10	7/2/2019
Metals			
Barium	mg/l	<0.050	7/3/2019
Beryllium	mg/l	<0.005	7/3/2019
Chromium	mg/l	<0.050	7/3/2019
Cobalt	mg/l	<0.050	7/3/2019
Copper	mg/l	<0.010	7/3/2019
Nickel	mg/l	<0.050	7/3/2019
Silver	mg/l	<0.050	7/3/2019
Vanadium	mg/l	<0.050	7/3/2019
Zinc	mg/l	<0.10	7/3/2019
Metals by ICP MassSpec			
Antimony	mg/l	<0.002	7/5/2019
Arsenic	mg/l	<0.001	7/5/2019
Cadmium	mg/l	<0.001	7/5/2019
Lead	mg/l	<0.001	7/5/2019
Selenium	mg/l	<0.002	7/5/2019
Thallium	mg/l	<0.001	7/5/2019

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1906-12088

Project Name: PHASE II HOPKINTON LANDFILL

-Laboratory Control Standard-

Parameter	Units	Spike Conc.	Detected Conc.	% Rec.	Date Analyzed
Total Suspended Solids	mg/l	100	100	100	7/2/2019
Total Suspended Solids	mg/l	100	110	110	7/2/2019
Total Suspended Solids	mg/l	100	100	100	7/2/2019
Total Solids	mg/l	1100	1100	100	7/2/2019
Total Solids	mg/l	1100	1100	100	7/2/2019
Total Solids	mg/l	1100	1100	100	7/2/2019
Metals					
Barium	mg/l	1.00	1.00	100	7/3/2019
Beryllium	mg/l	1.00	1.07	107	7/3/2019
Chromium	mg/l	1.00	1.05	105	7/3/2019
Cobalt	mg/l	1.00	1.00	100	7/3/2019
Copper	mg/l	1.00	1.03	103	7/3/2019
Nickel	mg/l	1.00	0.994	99	7/3/2019
Silver	mg/l	1.00	0.994	99	7/3/2019
Vanadium	mg/l	1.00	1.09	109	7/3/2019
Zinc	mg/l	1.00	0.982	98	7/3/2019
Barium	mg/l	1.00	0.991	99	7/3/2019
Beryllium	mg/l	1.00	1.05	105	7/3/2019
Chromium	mg/l	1.00	1.02	102	7/3/2019
Cobalt	mg/l	1.00	0.981	98	7/3/2019
Copper	mg/l	1.00	1.01	101	7/3/2019
Nickel	mg/l	1.00	0.965	97	7/3/2019
Silver	mg/l	1.00	0.979	98	7/3/2019
Vanadium	mg/l	1.00	1.06	106	7/3/2019
Zinc	mg/l	1.00	0.964	96	7/3/2019
Metals by ICP MassSpec					
Antimony	mg/l	0.050	0.053	106	7/5/2019
Arsenic	mg/l	0.050	0.049	98	7/5/2019
Cadmium	mg/l	0.050	0.049	98	7/5/2019
Lead	mg/l	0.050	0.052	104	7/5/2019
Selenium	mg/l	0.050	0.049	98	7/5/2019
Thallium	mg/l	0.050	0.050	100	7/5/2019
Antimony	mg/l	0.050	0.053	106	7/5/2019
Arsenic	mg/l	0.050	0.049	98	7/5/2019
Cadmium	mg/l	0.050	0.049	98	7/5/2019
Lead	mg/l	0.050	0.051	102	7/5/2019
Selenium	mg/l	0.050	0.049	98	7/5/2019
Thallium	mg/l	0.050	0.050	100	7/5/2019

Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

July 11, 2019

Data Reporting
R.I. Analytical Laboratories
41 Illinois Avenue
Warwick, RI 02888

RE: Project: 1906-12088
Pace Project No.: 7096019

Dear Data Reporting:
Enclosed are the analytical results for sample(s) received by the laboratory on July 02, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sophia Sparkes

Sophia Sparkes
sophia.sparkes@pacelabs.com
(631)694-3040
Project Manager

Enclosures

cc: Kristen Phelan, R.I. Analytical Laboratories
Dawne Smart, R.I. Analytical

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Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

CERTIFICATIONS

Project: 1906-12088
Pace Project No.: 7096019

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747
New York Certification #: 10478 Primary Accrediting Body
New Jersey Certification #: NY158
Pennsylvania Certification #: 68-00350
Connecticut Certification #: PH-0435
Maryland Certification #: 208
Rhode Island Certification #: LAO00340
Massachusetts Certification #: M-NY026
New Hampshire Certification #: 2987

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ANALYTICAL RESULTS

Project: 1906-12088
Pace Project No.: 7096019

Sample: 1906-12088-001 **Lab ID: 7096019001** Collected: 06/26/19 00:00 Received: 07/02/19 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260C Volatile Organics	Analytical Method: EPA 8260C/5030C							
Acetone	**<5.0**	ug/L	5.0	1		07/08/19 17:26	67-64-1	IC
Acrylonitrile	**<1.0**	ug/L	1.0	1		07/08/19 17:26	107-13-1	
Benzene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	71-43-2	
Bromochloromethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	74-97-5	
Bromodichloromethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	75-27-4	
Bromoform	**<1.0**	ug/L	1.0	1		07/08/19 17:26	75-25-2	
Bromomethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	74-83-9	
2-Butanone (MEK)	**<5.0**	ug/L	5.0	1		07/08/19 17:26	78-93-3	IL
Carbon disulfide	**<1.0**	ug/L	1.0	1		07/08/19 17:26	75-15-0	
Carbon tetrachloride	**<1.0**	ug/L	1.0	1		07/08/19 17:26	56-23-5	
Chlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	108-90-7	
Chloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	75-00-3	
Chloroform	**<1.0**	ug/L	1.0	1		07/08/19 17:26	67-66-3	
Chloromethane	**10.5**	ug/L	1.0	1		07/08/19 17:26	74-87-3	
1,2-Dibromo-3-chloropropane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	96-12-8	
Dibromochloromethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	124-48-1	
1,2-Dibromoethane (EDB)	**<1.0**	ug/L	1.0	1		07/08/19 17:26	106-93-4	
Dibromomethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	74-95-3	
1,2-Dichlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	95-50-1	
1,4-Dichlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	106-46-7	
trans-1,4-Dichloro-2-butene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	110-57-6	
1,1-Dichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	75-34-3	
1,2-Dichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	107-06-2	
1,1-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	75-35-4	
cis-1,2-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	156-59-2	
trans-1,2-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	156-60-5	
1,2-Dichloropropane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	78-87-5	
cis-1,3-Dichloropropene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	10061-01-5	
trans-1,3-Dichloropropene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	10061-02-6	
Ethylbenzene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	100-41-4	
2-Hexanone	**<5.0**	ug/L	5.0	1		07/08/19 17:26	591-78-6	
Iodomethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	74-88-4	
Methylene Chloride	**<1.0**	ug/L	1.0	1		07/08/19 17:26	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<5.0**	ug/L	5.0	1		07/08/19 17:26	108-10-1	
Styrene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	100-42-5	
1,1,1,2-Tetrachloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	630-20-6	
1,1,2,2-Tetrachloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	79-34-5	
Tetrachloroethene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	127-18-4	
Toluene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	108-88-3	
1,1,1-Trichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	71-55-6	
1,1,2-Trichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	79-00-5	
Trichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	79-01-6	
Trichlorofluoromethane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	75-69-4	
1,2,3-Trichloropropane	**<1.0**	ug/L	1.0	1		07/08/19 17:26	96-18-4	
Vinyl acetate	**<1.0**	ug/L	1.0	1		07/08/19 17:26	108-05-4	
Vinyl chloride	**<1.0**	ug/L	1.0	1		07/08/19 17:26	75-01-4	
m&p-Xylene	**<2.0**	ug/L	2.0	1		07/08/19 17:26	179601-23-1	

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575 Broad Hollow Road
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ANALYTICAL RESULTS

Project: 1906-12088
Pace Project No.: 7096019

Sample: 1906-12088-001 **Lab ID: 7096019001** Collected: 06/26/19 00:00 Received: 07/02/19 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260C Volatile Organics	Analytical Method: EPA 8260C/5030C							
o-Xylene	**<1.0**	ug/L	1.0	1		07/08/19 17:26	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	106	%	68-153	1		07/08/19 17:26	17060-07-0	
4-Bromofluorobenzene (S)	98	%	79-124	1		07/08/19 17:26	460-00-4	
Toluene-d8 (S)	97	%	69-124	1		07/08/19 17:26	2037-26-5	

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ANALYTICAL RESULTS

Project: 1906-12088
Pace Project No.: 7096019

Sample: 1906-12088-002 **Lab ID: 7096019002** Collected: 06/26/19 00:00 Received: 07/02/19 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260C Volatile Organics	Analytical Method: EPA 8260C/5030C							
Acetone	**<5.0**	ug/L	5.0	1		07/08/19 17:46	67-64-1	IC
Acrylonitrile	**<1.0**	ug/L	1.0	1		07/08/19 17:46	107-13-1	
Benzene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	71-43-2	
Bromochloromethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	74-97-5	
Bromodichloromethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	75-27-4	
Bromoform	**<1.0**	ug/L	1.0	1		07/08/19 17:46	75-25-2	
Bromomethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	74-83-9	
2-Butanone (MEK)	**<5.0**	ug/L	5.0	1		07/08/19 17:46	78-93-3	IL
Carbon disulfide	**<1.0**	ug/L	1.0	1		07/08/19 17:46	75-15-0	
Carbon tetrachloride	**<1.0**	ug/L	1.0	1		07/08/19 17:46	56-23-5	
Chlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	108-90-7	
Chloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	75-00-3	
Chloroform	**<1.0**	ug/L	1.0	1		07/08/19 17:46	67-66-3	
Chloromethane	**5.2**	ug/L	1.0	1		07/08/19 17:46	74-87-3	D6
1,2-Dibromo-3-chloropropane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	96-12-8	
Dibromochloromethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	124-48-1	
1,2-Dibromoethane (EDB)	**<1.0**	ug/L	1.0	1		07/08/19 17:46	106-93-4	
Dibromomethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	74-95-3	
1,2-Dichlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	95-50-1	
1,4-Dichlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	106-46-7	
trans-1,4-Dichloro-2-butene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	110-57-6	
1,1-Dichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	75-34-3	
1,2-Dichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	107-06-2	
1,1-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	75-35-4	
cis-1,2-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	156-59-2	
trans-1,2-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	156-60-5	
1,2-Dichloropropane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	78-87-5	
cis-1,3-Dichloropropene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	10061-01-5	
trans-1,3-Dichloropropene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	10061-02-6	
Ethylbenzene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	100-41-4	
2-Hexanone	**<5.0**	ug/L	5.0	1		07/08/19 17:46	591-78-6	
Iodomethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	74-88-4	
Methylene Chloride	**<1.0**	ug/L	1.0	1		07/08/19 17:46	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<5.0**	ug/L	5.0	1		07/08/19 17:46	108-10-1	
Styrene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	100-42-5	
1,1,1,2-Tetrachloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	630-20-6	
1,1,2,2-Tetrachloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	79-34-5	
Tetrachloroethene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	127-18-4	
Toluene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	108-88-3	
1,1,1-Trichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	71-55-6	
1,1,2-Trichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	79-00-5	
Trichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	79-01-6	
Trichlorofluoromethane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	75-69-4	
1,2,3-Trichloropropane	**<1.0**	ug/L	1.0	1		07/08/19 17:46	96-18-4	
Vinyl acetate	**<1.0**	ug/L	1.0	1		07/08/19 17:46	108-05-4	
Vinyl chloride	**<1.0**	ug/L	1.0	1		07/08/19 17:46	75-01-4	
m&p-Xylene	**<2.0**	ug/L	2.0	1		07/08/19 17:46	179601-23-1	

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ANALYTICAL RESULTS

Project: 1906-12088
Pace Project No.: 7096019

Sample: 1906-12088-002 **Lab ID: 7096019002** Collected: 06/26/19 00:00 Received: 07/02/19 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260C Volatile Organics	Analytical Method: EPA 8260C/5030C							
o-Xylene	**<1.0**	ug/L	1.0	1		07/08/19 17:46	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	115	%	68-153	1		07/08/19 17:46	17060-07-0	
4-Bromofluorobenzene (S)	105	%	79-124	1		07/08/19 17:46	460-00-4	
Toluene-d8 (S)	98	%	69-124	1		07/08/19 17:46	2037-26-5	

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ANALYTICAL RESULTS

Project: 1906-12088
Pace Project No.: 7096019

Sample: 1906-12088-003 **Lab ID: 7096019003** Collected: 06/26/19 00:00 Received: 07/02/19 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260C Volatile Organics	Analytical Method: EPA 8260C/5030C							
Acetone	**<5.0**	ug/L	5.0	1		07/08/19 18:05	67-64-1	IC
Acrylonitrile	**<1.0**	ug/L	1.0	1		07/08/19 18:05	107-13-1	
Benzene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	71-43-2	
Bromochloromethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	74-97-5	
Bromodichloromethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	75-27-4	
Bromoform	**<1.0**	ug/L	1.0	1		07/08/19 18:05	75-25-2	
Bromomethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	74-83-9	
2-Butanone (MEK)	**<5.0**	ug/L	5.0	1		07/08/19 18:05	78-93-3	IL
Carbon disulfide	**<1.0**	ug/L	1.0	1		07/08/19 18:05	75-15-0	
Carbon tetrachloride	**<1.0**	ug/L	1.0	1		07/08/19 18:05	56-23-5	
Chlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	108-90-7	
Chloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	75-00-3	
Chloroform	**<1.0**	ug/L	1.0	1		07/08/19 18:05	67-66-3	
Chloromethane	**2.9**	ug/L	1.0	1		07/08/19 18:05	74-87-3	
1,2-Dibromo-3-chloropropane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	96-12-8	
Dibromochloromethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	124-48-1	
1,2-Dibromoethane (EDB)	**<1.0**	ug/L	1.0	1		07/08/19 18:05	106-93-4	
Dibromomethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	74-95-3	
1,2-Dichlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	95-50-1	
1,4-Dichlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	106-46-7	
trans-1,4-Dichloro-2-butene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	110-57-6	
1,1-Dichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	75-34-3	
1,2-Dichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	107-06-2	
1,1-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	75-35-4	
cis-1,2-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	156-59-2	
trans-1,2-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	156-60-5	
1,2-Dichloropropane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	78-87-5	
cis-1,3-Dichloropropene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	10061-01-5	
trans-1,3-Dichloropropene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	10061-02-6	
Ethylbenzene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	100-41-4	
2-Hexanone	**<5.0**	ug/L	5.0	1		07/08/19 18:05	591-78-6	
Iodomethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	74-88-4	
Methylene Chloride	**<1.0**	ug/L	1.0	1		07/08/19 18:05	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<5.0**	ug/L	5.0	1		07/08/19 18:05	108-10-1	
Styrene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	100-42-5	
1,1,1,2-Tetrachloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	630-20-6	
1,1,2,2-Tetrachloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	79-34-5	
Tetrachloroethene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	127-18-4	
Toluene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	108-88-3	
1,1,1-Trichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	71-55-6	
1,1,2-Trichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	79-00-5	
Trichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	79-01-6	
Trichlorofluoromethane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	75-69-4	
1,2,3-Trichloropropane	**<1.0**	ug/L	1.0	1		07/08/19 18:05	96-18-4	
Vinyl acetate	**<1.0**	ug/L	1.0	1		07/08/19 18:05	108-05-4	
Vinyl chloride	**<1.0**	ug/L	1.0	1		07/08/19 18:05	75-01-4	
m&p-Xylene	**<2.0**	ug/L	2.0	1		07/08/19 18:05	179601-23-1	

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ANALYTICAL RESULTS

Project: 1906-12088
Pace Project No.: 7096019

Sample: 1906-12088-003 **Lab ID: 7096019003** Collected: 06/26/19 00:00 Received: 07/02/19 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260C Volatile Organics	Analytical Method: EPA 8260C/5030C							
o-Xylene	**<1.0**	ug/L	1.0	1		07/08/19 18:05	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	107	%	68-153	1		07/08/19 18:05	17060-07-0	
4-Bromofluorobenzene (S)	98	%	79-124	1		07/08/19 18:05	460-00-4	
Toluene-d8 (S)	98	%	69-124	1		07/08/19 18:05	2037-26-5	

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ANALYTICAL RESULTS

Project: 1906-12088
Pace Project No.: 7096019

Sample: 1906-12088-004 **Lab ID: 7096019004** Collected: 06/26/19 00:00 Received: 07/02/19 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260C Volatile Organics	Analytical Method: EPA 8260C/5030C							
Acetone	**6.6**	ug/L	5.0	1		07/08/19 18:28	67-64-1	IC
Acrylonitrile	**<1.0**	ug/L	1.0	1		07/08/19 18:28	107-13-1	
Benzene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	71-43-2	
Bromochloromethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	74-97-5	
Bromodichloromethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	75-27-4	
Bromoform	**<1.0**	ug/L	1.0	1		07/08/19 18:28	75-25-2	
Bromomethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	74-83-9	
2-Butanone (MEK)	**<5.0**	ug/L	5.0	1		07/08/19 18:28	78-93-3	IL
Carbon disulfide	**<1.0**	ug/L	1.0	1		07/08/19 18:28	75-15-0	
Carbon tetrachloride	**<1.0**	ug/L	1.0	1		07/08/19 18:28	56-23-5	
Chlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	108-90-7	
Chloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	75-00-3	
Chloroform	**<1.0**	ug/L	1.0	1		07/08/19 18:28	67-66-3	
Chloromethane	**2.5**	ug/L	1.0	1		07/08/19 18:28	74-87-3	
1,2-Dibromo-3-chloropropane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	96-12-8	
Dibromochloromethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	124-48-1	
1,2-Dibromoethane (EDB)	**<1.0**	ug/L	1.0	1		07/08/19 18:28	106-93-4	
Dibromomethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	74-95-3	
1,2-Dichlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	95-50-1	
1,4-Dichlorobenzene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	106-46-7	
trans-1,4-Dichloro-2-butene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	110-57-6	
1,1-Dichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	75-34-3	
1,2-Dichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	107-06-2	
1,1-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	75-35-4	
cis-1,2-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	156-59-2	
trans-1,2-Dichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	156-60-5	
1,2-Dichloropropane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	78-87-5	
cis-1,3-Dichloropropene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	10061-01-5	
trans-1,3-Dichloropropene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	10061-02-6	
Ethylbenzene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	100-41-4	
2-Hexanone	**<5.0**	ug/L	5.0	1		07/08/19 18:28	591-78-6	
Iodomethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	74-88-4	
Methylene Chloride	**<1.0**	ug/L	1.0	1		07/08/19 18:28	75-09-2	
4-Methyl-2-pentanone (MIBK)	**<5.0**	ug/L	5.0	1		07/08/19 18:28	108-10-1	
Styrene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	100-42-5	
1,1,1,2-Tetrachloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	630-20-6	
1,1,2,2-Tetrachloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	79-34-5	
Tetrachloroethene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	127-18-4	
Toluene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	108-88-3	
1,1,1-Trichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	71-55-6	
1,1,2-Trichloroethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	79-00-5	
Trichloroethene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	79-01-6	
Trichlorofluoromethane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	75-69-4	
1,2,3-Trichloropropane	**<1.0**	ug/L	1.0	1		07/08/19 18:28	96-18-4	
Vinyl acetate	**<1.0**	ug/L	1.0	1		07/08/19 18:28	108-05-4	
Vinyl chloride	**<1.0**	ug/L	1.0	1		07/08/19 18:28	75-01-4	
m&p-Xylene	**<2.0**	ug/L	2.0	1		07/08/19 18:28	179601-23-1	

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Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

ANALYTICAL RESULTS

Project: 1906-12088
Pace Project No.: 7096019

Sample: 1906-12088-004 **Lab ID: 7096019004** Collected: 06/26/19 00:00 Received: 07/02/19 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260C Volatile Organics	Analytical Method: EPA 8260C/5030C							
o-Xylene	**<1.0**	ug/L	1.0	1		07/08/19 18:28	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	109	%	68-153	1		07/08/19 18:28	17060-07-0	
4-Bromofluorobenzene (S)	99	%	79-124	1		07/08/19 18:28	460-00-4	
Toluene-d8 (S)	98	%	69-124	1		07/08/19 18:28	2037-26-5	

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QUALITY CONTROL DATA

Project: 1906-12088
Pace Project No.: 7096019

QC Batch: 120861 Analysis Method: EPA 8260C/5030C
QC Batch Method: EPA 8260C/5030C Analysis Description: 8260 MSV
Associated Lab Samples: 7096019001, 7096019002, 7096019003, 7096019004

METHOD BLANK: 575311 Matrix: Water
Associated Lab Samples: 7096019001, 7096019002, 7096019003, 7096019004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<1.0	1.0	07/08/19 13:34	
1,1,1-Trichloroethane	ug/L	<1.0	1.0	07/08/19 13:34	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	1.0	07/08/19 13:34	
1,1,2-Trichloroethane	ug/L	<1.0	1.0	07/08/19 13:34	
1,1-Dichloroethane	ug/L	<1.0	1.0	07/08/19 13:34	
1,1-Dichloroethene	ug/L	<1.0	1.0	07/08/19 13:34	
1,2,3-Trichloropropane	ug/L	<1.0	1.0	07/08/19 13:34	
1,2-Dibromo-3-chloropropane	ug/L	<1.0	1.0	07/08/19 13:34	
1,2-Dibromoethane (EDB)	ug/L	<1.0	1.0	07/08/19 13:34	
1,2-Dichlorobenzene	ug/L	<1.0	1.0	07/08/19 13:34	
1,2-Dichloroethane	ug/L	<1.0	1.0	07/08/19 13:34	
1,2-Dichloropropane	ug/L	<1.0	1.0	07/08/19 13:34	
1,4-Dichlorobenzene	ug/L	<1.0	1.0	07/08/19 13:34	
2-Butanone (MEK)	ug/L	<5.0	5.0	07/08/19 13:34	IL
2-Hexanone	ug/L	<5.0	5.0	07/08/19 13:34	
4-Methyl-2-pentanone (MIBK)	ug/L	<5.0	5.0	07/08/19 13:34	
Acetone	ug/L	<5.0	5.0	07/08/19 13:34	IC
Acrylonitrile	ug/L	<1.0	1.0	07/08/19 13:34	
Benzene	ug/L	<1.0	1.0	07/08/19 13:34	
Bromochloromethane	ug/L	<1.0	1.0	07/08/19 13:34	
Bromodichloromethane	ug/L	<1.0	1.0	07/08/19 13:34	
Bromoform	ug/L	<1.0	1.0	07/08/19 13:34	
Bromomethane	ug/L	<1.0	1.0	07/08/19 13:34	
Carbon disulfide	ug/L	<1.0	1.0	07/08/19 13:34	
Carbon tetrachloride	ug/L	<1.0	1.0	07/08/19 13:34	
Chlorobenzene	ug/L	<1.0	1.0	07/08/19 13:34	
Chloroethane	ug/L	<1.0	1.0	07/08/19 13:34	
Chloroform	ug/L	<1.0	1.0	07/08/19 13:34	
Chloromethane	ug/L	<1.0	1.0	07/08/19 13:34	
cis-1,2-Dichloroethene	ug/L	<1.0	1.0	07/08/19 13:34	
cis-1,3-Dichloropropene	ug/L	<1.0	1.0	07/08/19 13:34	
Dibromochloromethane	ug/L	<1.0	1.0	07/08/19 13:34	
Dibromomethane	ug/L	<1.0	1.0	07/08/19 13:34	
Ethylbenzene	ug/L	<1.0	1.0	07/08/19 13:34	
Iodomethane	ug/L	<1.0	1.0	07/08/19 13:34	
m&p-Xylene	ug/L	<2.0	2.0	07/08/19 13:34	
Methylene Chloride	ug/L	<1.0	1.0	07/08/19 13:34	
o-Xylene	ug/L	<1.0	1.0	07/08/19 13:34	
Styrene	ug/L	<1.0	1.0	07/08/19 13:34	
Tetrachloroethene	ug/L	<1.0	1.0	07/08/19 13:34	
Toluene	ug/L	<1.0	1.0	07/08/19 13:34	

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QUALITY CONTROL DATA

Project: 1906-12088
Pace Project No.: 7096019

METHOD BLANK: 575311 Matrix: Water
Associated Lab Samples: 7096019001, 7096019002, 7096019003, 7096019004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
trans-1,2-Dichloroethene	ug/L	<1.0	1.0	07/08/19 13:34	
trans-1,3-Dichloropropene	ug/L	<1.0	1.0	07/08/19 13:34	
trans-1,4-Dichloro-2-butene	ug/L	<1.0	1.0	07/08/19 13:34	
Trichloroethene	ug/L	<1.0	1.0	07/08/19 13:34	
Trichlorofluoromethane	ug/L	<1.0	1.0	07/08/19 13:34	
Vinyl acetate	ug/L	<1.0	1.0	07/08/19 13:34	
Vinyl chloride	ug/L	<1.0	1.0	07/08/19 13:34	
1,2-Dichloroethane-d4 (S)	%	107	68-153	07/08/19 13:34	
4-Bromofluorobenzene (S)	%	98	79-124	07/08/19 13:34	
Toluene-d8 (S)	%	99	69-124	07/08/19 13:34	

LABORATORY CONTROL SAMPLE: 575312

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	44.2	88	74-113	
1,1,1-Trichloroethane	ug/L	50	49.0	98	65-118	
1,1,2,2-Tetrachloroethane	ug/L	50	53.2	106	74-121	
1,1,2-Trichloroethane	ug/L	50	50.5	101	80-117	
1,1-Dichloroethane	ug/L	50	53.2	106	83-151	
1,1-Dichloroethene	ug/L	50	51.8	104	45-146	
1,2,3-Trichloropropane	ug/L	50	46.5	93	71-123	
1,2-Dibromo-3-chloropropane	ug/L	50	50.7	101	74-119	
1,2-Dibromoethane (EDB)	ug/L	50	48.2	96	83-115	
1,2-Dichlorobenzene	ug/L	50	49.6	99	74-113	
1,2-Dichloroethane	ug/L	50	55.8	112	74-129	
1,2-Dichloropropane	ug/L	50	50.4	101	75-117	
1,4-Dichlorobenzene	ug/L	50	49.2	98	71-113	
2-Butanone (MEK)	ug/L	50	50.9	102	44-162	IL
2-Hexanone	ug/L	50	50.3	101	32-183	
4-Methyl-2-pentanone (MIBK)	ug/L	50	51.0	102	69-132	
Acetone	ug/L	50	56.0	112	23-188	IC
Acrylonitrile	ug/L	50	54.5	109	59-148	
Benzene	ug/L	50	48.9	98	73-119	
Bromochloromethane	ug/L	50	52.5	105	81-116	
Bromodichloromethane	ug/L	50	51.0	102	78-117	
Bromoform	ug/L	50	42.5	85	65-122	
Bromomethane	ug/L	50	54.6	109	52-147	
Carbon disulfide	ug/L	50	48.6	97	41-144	
Carbon tetrachloride	ug/L	50	50.9	102	59-120	
Chlorobenzene	ug/L	50	46.7	93	75-113	
Chloroethane	ug/L	50	52.4	105	49-151	
Chloroform	ug/L	50	54.6	109	72-122	
Chloromethane	ug/L	50	51.9	104	46-144	
cis-1,2-Dichloroethene	ug/L	50	50.6	101	72-121	

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QUALITY CONTROL DATA

Project: 1906-12088
Pace Project No.: 7096019

LABORATORY CONTROL SAMPLE: 575312

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
cis-1,3-Dichloropropene	ug/L	50	50.3	101	78-116	
Dibromochloromethane	ug/L	50	46.9	94	70-120	
Dibromomethane	ug/L	50	47.6	95	75-125	
Ethylbenzene	ug/L	50	46.0	92	70-113	
Iodomethane	ug/L	50	37.3	75	61-144	
m&p-Xylene	ug/L	100	90.2	90	72-115	
Methylene Chloride	ug/L	50	50.6	101	61-142	
o-Xylene	ug/L	50	44.9	90	73-117	
Styrene	ug/L	50	45.8	92	72-118	
Tetrachloroethene	ug/L	50	45.3	91	60-128	
Toluene	ug/L	50	49.0	98	72-119	
trans-1,2-Dichloroethene	ug/L	50	51.4	103	56-142	
trans-1,3-Dichloropropene	ug/L	50	49.6	99	79-116	
trans-1,4-Dichloro-2-butene	ug/L	50	54.4	109	71-121	
Trichloroethene	ug/L	50	47.5	95	69-117	
Trichlorofluoromethane	ug/L	50	53.5	107	27-173	
Vinyl acetate	ug/L	50	53.2	106	20-158	
Vinyl chloride	ug/L	50	53.6	107	43-143	
1,2-Dichloroethane-d4 (S)	%			107	68-153	
4-Bromofluorobenzene (S)	%			104	79-124	
Toluene-d8 (S)	%			104	69-124	

MATRIX SPIKE SAMPLE: 575676

Parameter	Units	7096019001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<1.0	50	47.4	95	74-113	
1,1,1-Trichloroethane	ug/L	<1.0	50	54.4	109	65-118	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	50	55.3	111	74-121	
1,1,2-Trichloroethane	ug/L	<1.0	50	53.8	108	80-117	
1,1-Dichloroethane	ug/L	<1.0	50	59.0	118	83-151	
1,1-Dichloroethene	ug/L	<1.0	50	56.6	113	45-146	
1,2,3-Trichloropropane	ug/L	<1.0	50	50.5	101	71-123	
1,2-Dibromo-3-chloropropane	ug/L	<1.0	50	52.2	104	74-119	
1,2-Dibromoethane (EDB)	ug/L	<1.0	50	50.6	101	83-115	
1,2-Dichlorobenzene	ug/L	<1.0	50	53.8	108	74-113	
1,2-Dichloroethane	ug/L	<1.0	50	59.3	119	74-129	
1,2-Dichloropropane	ug/L	<1.0	50	55.5	111	75-117	
1,4-Dichlorobenzene	ug/L	<1.0	50	53.1	106	71-113	
2-Butanone (MEK)	ug/L	<5.0	50	51.9	104	44-162	IL
2-Hexanone	ug/L	<5.0	50	50.9	102	32-183	
4-Methyl-2-pentanone (MIBK)	ug/L	<5.0	50	54.7	109	69-132	
Acetone	ug/L	<5.0	50	63.1	121	23-188	IC
Acrylonitrile	ug/L	<1.0	50	57.3	115	59-148	
Benzene	ug/L	<1.0	50	54.0	108	73-119	
Bromochloromethane	ug/L	<1.0	50	55.1	110	81-116	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1906-12088
Pace Project No.: 7096019

MATRIX SPIKE SAMPLE: 575676

Parameter	Units	7096019001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromodichloromethane	ug/L	<1.0	50	53.8	108	78-117	
Bromoform	ug/L	<1.0	50	42.3	85	65-122	
Bromomethane	ug/L	<1.0	50	32.3	65	52-147	
Carbon disulfide	ug/L	<1.0	50	51.5	103	41-144	
Carbon tetrachloride	ug/L	<1.0	50	55.5	111	59-120	
Chlorobenzene	ug/L	<1.0	50	51.3	103	75-113	
Chloroethane	ug/L	<1.0	50	56.1	112	49-151	
Chloroform	ug/L	<1.0	50	59.8	120	72-122	
Chloromethane	ug/L	10.5	50	51.9	83	46-144	
cis-1,2-Dichloroethene	ug/L	<1.0	50	55.5	111	72-121	
cis-1,3-Dichloropropene	ug/L	<1.0	50	54.3	109	78-116	
Dibromochloromethane	ug/L	<1.0	50	46.7	93	70-120	
Dibromomethane	ug/L	<1.0	50	50.9	102	75-125	
Ethylbenzene	ug/L	<1.0	50	51.4	103	70-113	
Iodomethane	ug/L	<1.0	50	64.4	129	61-144	
m&p-Xylene	ug/L	<2.0	100	102	102	72-115	
Methylene Chloride	ug/L	<1.0	50	55.4	111	61-142	
o-Xylene	ug/L	<1.0	50	51.3	103	73-117	
Styrene	ug/L	<1.0	50	50.9	102	72-118	
Tetrachloroethene	ug/L	<1.0	50	48.5	97	60-128	
Toluene	ug/L	<1.0	50	54.5	109	72-119	
trans-1,2-Dichloroethene	ug/L	<1.0	50	56.6	113	56-142	
trans-1,3-Dichloropropene	ug/L	<1.0	50	52.8	106	79-116	
trans-1,4-Dichloro-2-butene	ug/L	<1.0	50	48.4	97	71-121	
Trichloroethene	ug/L	<1.0	50	52.0	104	69-117	
Trichlorofluoromethane	ug/L	<1.0	50	56.7	113	27-173	
Vinyl acetate	ug/L	<1.0	50	54.3	109	20-158	
Vinyl chloride	ug/L	<1.0	50	53.1	106	43-143	
1,2-Dichloroethane-d4 (S)	%				107	68-153	
4-Bromofluorobenzene (S)	%				98	79-124	
Toluene-d8 (S)	%				99	69-124	

SAMPLE DUPLICATE: 575680

Parameter	Units	7096019002 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<1.0	<1.0		
1,1,1-Trichloroethane	ug/L	<1.0	<1.0		
1,1,2,2-Tetrachloroethane	ug/L	<1.0	<1.0		
1,1,2-Trichloroethane	ug/L	<1.0	<1.0		
1,1-Dichloroethane	ug/L	<1.0	<1.0		
1,1-Dichloroethene	ug/L	<1.0	<1.0		
1,2,3-Trichloropropane	ug/L	<1.0	<1.0		
1,2-Dibromo-3-chloropropane	ug/L	<1.0	<1.0		
1,2-Dibromoethane (EDB)	ug/L	<1.0	<1.0		
1,2-Dichlorobenzene	ug/L	<1.0	<1.0		

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QUALITY CONTROL DATA

Project: 1906-12088
Pace Project No.: 7096019

SAMPLE DUPLICATE: 575680

Parameter	Units	7096019002 Result	Dup Result	RPD	Qualifiers
1,2-Dichloroethane	ug/L	<1.0	<1.0		
1,2-Dichloropropane	ug/L	<1.0	<1.0		
1,4-Dichlorobenzene	ug/L	<1.0	<1.0		
2-Butanone (MEK)	ug/L	<5.0	<5.0		IL
2-Hexanone	ug/L	<5.0	<5.0		
4-Methyl-2-pentanone (MIBK)	ug/L	<5.0	<5.0		
Acetone	ug/L	<5.0	5.3		IC
Acrylonitrile	ug/L	<1.0	<1.0		
Benzene	ug/L	<1.0	<1.0		
Bromochloromethane	ug/L	<1.0	<1.0		
Bromodichloromethane	ug/L	<1.0	<1.0		
Bromoform	ug/L	<1.0	<1.0		
Bromomethane	ug/L	<1.0	<1.0		
Carbon disulfide	ug/L	<1.0	<1.0		
Carbon tetrachloride	ug/L	<1.0	<1.0		
Chlorobenzene	ug/L	<1.0	<1.0		
Chloroethane	ug/L	<1.0	<1.0		
Chloroform	ug/L	<1.0	<1.0		
Chloromethane	ug/L	5.2	8.6	50	D6
cis-1,2-Dichloroethene	ug/L	<1.0	<1.0		
cis-1,3-Dichloropropene	ug/L	<1.0	<1.0		
Dibromochloromethane	ug/L	<1.0	<1.0		
Dibromomethane	ug/L	<1.0	<1.0		
Ethylbenzene	ug/L	<1.0	<1.0		
Iodomethane	ug/L	<1.0	<1.0		
m&p-Xylene	ug/L	<2.0	<2.0		
Methylene Chloride	ug/L	<1.0	<1.0		
o-Xylene	ug/L	<1.0	<1.0		
Styrene	ug/L	<1.0	<1.0		
Tetrachloroethene	ug/L	<1.0	<1.0		
Toluene	ug/L	<1.0	<1.0		
trans-1,2-Dichloroethene	ug/L	<1.0	<1.0		
trans-1,3-Dichloropropene	ug/L	<1.0	<1.0		
trans-1,4-Dichloro-2-butene	ug/L	<1.0	<1.0		
Trichloroethene	ug/L	<1.0	<1.0		
Trichlorofluoromethane	ug/L	<1.0	<1.0		
Vinyl acetate	ug/L	<1.0	<1.0		
Vinyl chloride	ug/L	<1.0	<1.0		
1,2-Dichloroethane-d4 (S)	%	115	107		
4-Bromofluorobenzene (S)	%	105	98		
Toluene-d8 (S)	%	98	98		

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QUALIFIERS

Project: 1906-12088
Pace Project No.: 7096019

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
IC	The initial calibration for this compound was outside of method control limits. The result is estimated.
IL	This analyte exceeded secondary source verification criteria low for the initial calibration. The reported results should be considered an estimated value.

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Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1906-12088
Pace Project No.: 7096019

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
7096019001	**1906-12088-001**	EPA 8260C/5030C	120861		
7096019002	**1906-12088-002**	EPA 8260C/5030C	120861		
7096019003	**1906-12088-003**	EPA 8260C/5030C	120861		
7096019004	**1906-12088-004**	EPA 8260C/5030C	120861		

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CHAIN OF CUSTODY RECORD

R.I. Analytical Laboratories, Inc.

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Warwick, RI 02888-3007
Tel: 800-937-2580
Fax: 401-738-1970

131 Coolidge St, Suite 105
Hudson, MA 01749-1331
Tel: 800-937-2580
Fax: 978-568-0078

Date Collected	Time Collected	Lab ID	Sample Identification	Grab or Composite	# of Containers & Type C	Preservation Code P	Matrix Code M		Volatile Organic Compounds - 8260
6/26/2019		1906-12088-001	MW-1	G	2V	H	GW		X
6/26/2019		1906-12088-002	MW-6	G	2V	H	GW		X
6/26/2019		1906-12088-003	Surface Runoff ED	G	2V	H	GW		X
6/26/2019		1906-12088-004	Surface Runoff WD	G	2V	H	GW		X

WO#:7096019

7096019

Send Report and Invoice to:	
Company Name:	R.I. Analytical Laboratories, Inc.
Address:	41 Illinois Avenue
City/State/Zip:	Warwick, RI 02888
Contact Person:	Kristen Phelan
Email:	kphelan@rianalytical.com; datareporting@rianalytical.com
Telephone:	401-737-8500 x 116

Subcontractor Information:	
Company Name:	Pace Analytical Services, Inc.
Address:	575 Broadhollow Road
City/State/Zip:	Melville, NY 11747
Contact Person:	Sophia Sparkes
Email:	Sophia.Sparkes@pacelabs.com
Telephone:	631-694-3040

Relinquished By	Date	Time	Received by	Date	Time
TQuartuccio	~~7-1-19~~ 7-1-19	1320	[illegible]	7-2-19	10:30

Turn Around Time	
X	10 day TAT
	Rush _____ (Days)

Project Comments

If MCL is exceeded, notify Kristen Mayo (800-937-2580 x109) and Ruben Parrilla (800-937-2580 x160/cell #(617) 893-0257)

PO # : 493

Temperature Upon Receipt 5.0 °C

Date Shipped:	7/1/2019
X	Fedex-rec. lab
X	Overnight
X	Shipped on Ice
WO #:	1906-12088

Containers: P=Poly, G=Glass, AG=Amber Glass, V=Vial, St=Sterile Preservatives: A=Ascorbic Acid, NH4=NH_4Cl, H=HCl, M=MeOH, N=HNO_3, NP=None, S=H_2SO_4, SB=$NaHSO_4$, SH=NaOH, T=$Na_2S_2O_3$, Z=ZnOAc

Matrix Codes: GW=Groundwater, SW=Surface Water, WW=Wastewater, DW=Drinking Water, S=Soil, SL=Sludge, A=Air, B=Bulk/Solid, O=_____

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
Acetone	<10	10	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Acrylonitrile	<10	10	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
2-Butanone(MEK)	<10	10	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
4-Methyl-2-pentanone(MIBK)	<10	10	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
2-Hexanone	<10	10	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
trans-1,4-Dichloro-2-butene	<10	10	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
cis-1,3-Dichloropropene	<0.4	0.4	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
trans-1,3-Dichloropropylene	<0.4	0.4	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Vinyl Acetate	<50	50	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Surrogates			RANGE				
Dibromofluoromethane	107		86-118%	SW-846 8260C	5/10/2019	15:30	RBR
Toluene-d8	99		88-110%	SW-846 8260C	5/10/2019	15:30	RBR
4-Bromofluorobenzene	98		86-115%	SW-846 8260C	5/10/2019	15:30	RBR
1,2 Dichloroethane-d4	107		80-120%	SW-846 8260C	5/10/2019	15:30	RBR
Volatile Organic Compounds							
Benzene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Bromochloromethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Bromodichloromethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Bromoform	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Bromomethane	<5	5	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Carbon Tetrachloride	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Chlorobenzene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Chloroethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Chloroform	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Chloromethane	1.9	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Dibromochloromethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,2-Dibromo-3-Chloropropane	<2	2	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,2-Dibromoethane(EDB)	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Dibromomethane	<2	2	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,2-Dichlorobenzene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,4-Dichlorobenzene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,1-Dichloroethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,2-Dichloroethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,1-Dichloroethene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
cis-1,2-Dichloroethene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
trans-1,2-Dichloroethylene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,2-Dichloropropane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Ethylbenzene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Methylene Chloride	<5	5	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Styrene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,1,1,2-Tetrachloroethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,1,2,2-Tetrachloroethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Tetrachloroethene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Toluene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,1,1-Trichloroethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,1,2-Trichloroethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Trichloroethene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Trichlorofluoromethane	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
1,2,3-Trichloropropane	<2	2	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Vinyl Chloride	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
o-Xylene	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
m,p-Xylene	<2	2	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Carbon Disulfide	<1	1	ug/l	SW-846 8260C	5/10/2019	15:30	RBR
Iodomethane	<10	10	ug/l	SW-846 8260C	5/10/2019	15:30	RBR

Sample Condition Upon Receipt

Pace Analytical

WO#: 7096019

PM: STS Due Date: 07/10/19

CLIENT: RIAL

Client Name: RIAL

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other

Tracking #: 7516 0948 9978

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals intact: ☐ Yes ☐ No Temperature Blank Present: ☐ Yes ☑

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ Ziploc ☐ None ☐ Other Type of Ice: Wet Blue None

Thermometer Used: TH091 Correction Factor: +0.2 ☐ Samples on ice, cooling process has begu

Cooler Temperature (°C): 5.0 Cooler Temperature Corrected (°C): 5.2 Date/Time 5035A kits placed in freezer

Temp should be above freezing to 6.0°C

USDA Regulated Soil (☑ N/A, water sample) Date and Initials of person examining contents: JK 7/12

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check map)? ☐ YES ☐ NO Did samples orignate from a foreign source (intern including Hawaii and Puerto Rico)? ☐ Yes ☐ N

If Yes to either question, fill out a Regulated Soil Checklist (F-LI-C-010) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present:	☑ Yes	☐ No		1.
Chain of Custody Filled Out:	☑ Yes	☐ No		2.
Chain of Custody Relinquished:	☑ Yes	☐ No		3.
Sampler Name & Signature on COC:	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time:	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72hr):	☐ Yes	☑ No		6.
Rush Turn Around Time Requested:	☐ Yes	☑ No		7.
Sufficient Volume: (Triple volume provided for MS/MSD)	☑ Yes	☐ No		8.
Correct Containers Used:	☑ Yes	☐ No		9.
-Pace Containers Used:	☑ Yes	☐ No		
Containers Intact:	☑ Yes	☐ No		10.
Filtered volume received for Dissolved tests	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels match COC:	☑ Yes	☐ No		12.
-Includes date/time/ID/Analysis Matrix SL (WT) OIL				
All containers needing preservation have been checked	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
pH paper Lot #				Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl, NaOH>9 Sulfide, NAOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water). Per Method, VOA pH is checked after analysis	☐ Yes	☐ No	☑ N/A	Initial when completed: / Lot # of added preservative: / Date/Time preservative a
Samples checked for dechlorination:	☐ Yes	☐ No	☑ N/A	14.
KI starch test strips Lot #				Positive for Res. Chlorine? Y N
Residual chlorine strips Lot #				
Headspace in VOA Vials (>6mm):	☐ Yes	☑ No	☐ N/A	15.
Trip Blank Present:	☐ Yes	☑ No	☐ N/A	16.
Trip Blank Custody Seals Present	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if applicable):				

Field Data Required? Y / N

Client Notification/ Resolution: Date/Time:

Person Contacted:

Comments/ Resolution:

* PM (Project Manager) review is documented electronically in LIMS.

CHAIN OF CUSTODY RECORD

R.I. Analytical Laboratories, Inc.

41 Illinois Avenue
Warwick, RI 02888
Tel: 800-937-2580
Fax: 401-738-1970

131 Coolidge St, Bldg. 2
Hudson, MA 01749
Tel: 888-228-3334
Fax: 978-568-0078

Date Collected	Time Collected	Field Sample Identification	Grab or Composite	# of Containers & Type T	Preservation Code P	Matrix Code M	VOCS	Metals	TSS	TS
6/26/19		MW-1	G	2P-2V	Np-N-H	GW	X	X		
6/26/19		MW-6	G	2P-2V	Np-N-H	GW	X	X		
6/26/19		Surface Runoff ED	G	2P-2V	Np-N-H	GW	X	X	X	X
6/26/19		Surface Runoff WD	G	2P-2V	Np-N-H	GW	X	X	X	X

Client Information

Company Name: Hoffman Engineering, Inc.
Address: 640 Ten Rod
City / State / Zip: North Kingstown, RI 02852
Telephone: 401-294-9032 Fax
Contact Person: Bob Hoffman

Project Information

Project Name: Phase II Hopkinton Landfill
P.O. Number: Project Number:
Report To: Bob Hoffman Phone: Fax:
Sampled by: Anthony Gomez
Quote No: Email address:

Relinquished By	Date	Time	Received By	Date	Time
[signature]	6/28/19	11:18	[signature]	6/28/19	11:18

Turn Around Time

X Normal — EMAIL Report
5 Business days. Possible surcharge
Rush _____ (business days)

Project Comments

Circle if applicable: GW-1, GW-2, GW-3, S-1, S-2, S-3 MCP Data Enhancement QC Package? Yes No

See Westerly Landfill Contract for Analytes. All metal subdrinking water detection limit. Samples collected Low Flow Report QA/QC

1.1

Lab Use Only

Sample Pick Up Only
RIAL sampled; attach field hours
Shipped on ice
Workorder No: 1906-12088

Container Types: P=Poly, G=Glass, AG=Amber Glass, V=Vial, St=Sterile
Preservation Codes: NP=None, N=HNO_3, H=HCl, S=H_2SO_4, SH=NaOH, SB=$NaHSO_4$, M=MeOH, T=$Na_2S_2O_3$, Z=ZnOAc, I=Ice
Matrix Codes: GW=Groundwater, SW=Surface Water, WW=Wastewater, DW=Drinking Water, S=Soil, Sl=Sludge, A=Air, B=Bulk/Solid, O=_____

R.I. ANALYTICAL
Specialists in Environmental Services

LABORATORY REPORT

Hoffman Engineering, Inc.
Attn: Robert Hoffman
640 Ten Rod Road
North Kingstown, RI 02852

Date Received: 9/3/2019
Date Reported: 9/12/2019
P.O. Number

Work Order #: 1909-16582
Project Name: HOPKINTON LANDFILL

Enclosed are the analytical results and Chain of Custody for your project referenced above. The sample(s) were analyzed by our Warwick, RI laboratory unless noted otherwise. When applicable, indication of sample analysis at our Hudson, MA laboratory and/or subcontracted results are noted and subcontracted reports are enclosed in their entirety.

All samples were analyzed within the established guidelines of US EPA approved methods with all requirements met, unless otherwise noted at the end of a given sample's analytical results or in a case narrative.

The Detection Limit is defined as the lowest level that can be reliably achieved during routine laboratory conditions.

These results only pertain to the samples submitted for this Work Order # and this report shall not be reproduced except in its entirety.

We certify that the following results are true and accurate to the best of our knowledge. If you have questions or need further assistance, please contact our Customer Service Department.

Approved by:

Dawne E. Smart
Data Reporting Manager

Laboratory Certification Numbers (as applicable to sample's origin state):
Warwick RI * RI LAI00033, MA M-RI015, CT PH-0508 Hudson MA * M-MA1117, RI LAO00319

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1909-16582

Project Name: HOPKINTON LANDFILL

Sample Number: 001
Sample Description: MW-5
Sample Type : GRAB
Sample Date / Time : 9/03/2019

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
Total Metals							
Antimony	<0.002	0.002	mg/l	SW-846 6020A	9/6/2019	16:38	AJD
Arsenic	<0.001	0.001	mg/l	SW-846 6020A	9/6/2019	16:38	AJD
Cadmium	<0.001	0.001	mg/l	SW-846 6020A	9/6/2019	16:38	AJD
Lead	<0.001	0.001	mg/l	SW-846 6020A	9/6/2019	16:38	AJD
Selenium	<0.002	0.002	mg/l	SW-846 6020A	9/6/2019	16:38	AJD
Thallium	<0.001	0.001	mg/l	SW-846 6020A	9/6/2019	16:38	AJD
Total Metals							
Barium	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:11	JAM
Beryllium	<0.005	0.005	mg/l	SW-846 6010C	9/11/2019	15:11	JAM
Chromium	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:11	JAM
Cobalt	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:11	JAM
Copper	<0.010	0.010	mg/l	SW-846 6010C	9/11/2019	15:11	JAM
Nickel	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:11	JAM
Silver	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:11	JAM
Vanadium	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:11	JAM
Zinc	<0.10	0.10	mg/l	SW-846 6010C	9/11/2019	15:11	JAM
ICPMS Digestion (Total)				SW-846 3020A	9/5/2019	14:05	RB
ICP Digestion				SW-846 3010A	9/11/2019	14:27	RB
Volatile Organic Compounds							
Benzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Bromobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Bromochloromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Bromodichloromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Bromoform	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Bromomethane	<5	5	ug/l	SW-846 8260C	9/11/2019	17:31	KF
n-Butylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Sec-butylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
tert-Butylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Carbon Tetrachloride	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Chlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Chloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Chloroform	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Chloromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
2-Chlorotoluene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
4-Chlorotoluene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Dibromochloromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,2-Dibromo-3-Chloropropane	<2	2	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,2-Dibromoethane(EDB)	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Dibromomethane	<2	2	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,2-Dichlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1909-16582

Project Name: HOPKINTON LANDFILL

Sample Number: 001
Sample Description: MW-5
Sample Type : GRAB
Sample Date / Time : 9/03/2019

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
1,3-Dichlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,4-Dichlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Dichlorodifluoromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,1-Dichloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,2-Dichloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,1-Dichloroethene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
cis-1,2-Dichloroethene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
trans-1,2-Dichloroethylene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,2-Dichloropropane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,3-Dichloropropane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
2,2-Dichloropropane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,1-Dichloropropene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Ethylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Hexachlorobutadiene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Isopropylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
p-Isopropyltoluene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Methylene Chloride	<5	5	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Naphthalene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
n-Propylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Styrene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,1,1,2-Tetrachloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,1,2,2-Tetrachloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Tetrachloroethene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Toluene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,2,3-Trichlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,2,4-Trichlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,1,1-Trichloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,1,2-Trichloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Trichloroethene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Trichlorofluoromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,2,3-Trichloropropane	<2	2	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,2,4-Trimethylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
1,3,5-Trimethylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Vinyl Chloride	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
o-Xylene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:31	KF
m,p-Xylene	<2	2	ug/l	SW-846 8260C	9/11/2019	17:31	KF
MTBE	<2	2	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Acetone	<10	10	ug/l	SW-846 8260C	9/11/2019	17:31	KF
Surrogates			RANGE				
Dibromofluoromethane	103		86-118%	SW-846 8260C	9/11/2019	17:31	KF
Toluene-d8	99		88-110%	SW-846 8260C	9/11/2019	17:31	KF
4-Bromofluorobenzene	93		86-115%	SW-846 8260C	9/11/2019	17:31	KF
1,2 Dichloroethane-d4	109		80-120%	SW-846 8260C	9/11/2019	17:31	KF

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1909-16582

Project Name: HOPKINTON LANDFILL

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1909-16582

Project Name: HOPKINTON LANDFILL

Sample Number: 002
Sample Description: MW-7
Sample Type : GRAB
Sample Date / Time : 8/30/2019

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
Total Metals							
Antimony	<0.002	0.002	mg/l	SW-846 6020A	9/6/2019	17:06	AJD
Arsenic	<0.001	0.001	mg/l	SW-846 6020A	9/6/2019	17:06	AJD
Cadmium	<0.001	0.001	mg/l	SW-846 6020A	9/6/2019	17:06	AJD
Lead	<0.001	0.001	mg/l	SW-846 6020A	9/6/2019	17:06	AJD
Selenium	<0.002	0.002	mg/l	SW-846 6020A	9/6/2019	17:06	AJD
Thallium	<0.001	0.001	mg/l	SW-846 6020A	9/6/2019	17:06	AJD
Total Metals							
Barium	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:15	JAM
Beryllium	<0.005	0.005	mg/l	SW-846 6010C	9/11/2019	15:15	JAM
Chromium	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:15	JAM
Cobalt	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:15	JAM
Copper	<0.010	0.010	mg/l	SW-846 6010C	9/11/2019	15:15	JAM
Nickel	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:15	JAM
Silver	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:15	JAM
Vanadium	<0.050	0.050	mg/l	SW-846 6010C	9/11/2019	15:15	JAM
Zinc	<0.10	0.10	mg/l	SW-846 6010C	9/11/2019	15:15	JAM
ICPMS Digestion (Total)				SW-846 3020A	9/5/2019	14:05	RB
ICP Digestion				SW-846 3010A	9/11/2019	14:27	RB
Volatile Organic Compounds							
Benzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Bromobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Bromochloromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Bromodichloromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Bromoform	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Bromomethane	<5	5	ug/l	SW-846 8260C	9/11/2019	17:04	KF
n-Butylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Sec-butylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
tert-Butylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Carbon Tetrachloride	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Chlorobenzene	2.1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Chloroethane	3.4	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Chloroform	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Chloromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
2-Chlorotoluene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
4-Chlorotoluene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Dibromochloromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,2-Dibromo-3-Chloropropane	<2	2	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,2-Dibromoethane(EDB)	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Dibromomethane	<2	2	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,2-Dichlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF

R.I. Analytical Laboratories, Inc.
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Hoffman Engineering, Inc.

Work Order #: 1909-16582

Project Name: HOPKINTON LANDFILL

Sample Number: 002
Sample Description: MW-7
Sample Type : GRAB
Sample Date / Time : 8/30/2019

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
1,3-Dichlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,4-Dichlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Dichlorodifluoromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,1-Dichloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,2-Dichloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,1-Dichloroethene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
cis-1,2-Dichloroethene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
trans-1,2-Dichloroethylene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,2-Dichloropropane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,3-Dichloropropane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
2,2-Dichloropropane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,1-Dichloropropene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Ethylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Hexachlorobutadiene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Isopropylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
p-Isopropyltoluene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Methylene Chloride	<5	5	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Naphthalene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
n-Propylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Styrene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,1,1,2-Tetrachloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,1,2,2-Tetrachloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Tetrachloroethene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Toluene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,2,3-Trichlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,2,4-Trichlorobenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,1,1-Trichloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,1,2-Trichloroethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Trichloroethene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Trichlorofluoromethane	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,2,3-Trichloropropane	<2	2	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,2,4-Trimethylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
1,3,5-Trimethylbenzene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Vinyl Chloride	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
o-Xylene	<1	1	ug/l	SW-846 8260C	9/11/2019	17:04	KF
m,p-Xylene	<2	2	ug/l	SW-846 8260C	9/11/2019	17:04	KF
MTBE	<2	2	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Acetone	<10	10	ug/l	SW-846 8260C	9/11/2019	17:04	KF
Surrogates			RANGE				
Dibromofluoromethane	106		86-118%	SW-846 8260C	9/11/2019	17:04	KF
Toluene-d8	100		88-110%	SW-846 8260C	9/11/2019	17:04	KF
4-Bromofluorobenzene	94		86-115%	SW-846 8260C	9/11/2019	17:04	KF
1,2 Dichloroethane-d4	102		80-120%	SW-846 8260C	9/11/2019	17:04	KF

R.I. Analytical Laboratories, Inc.
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Hoffman Engineering, Inc.

Work Order #: 1909-16582

Project Name: HOPKINTON LANDFILL

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1909-16582

Project Name: HOPKINTON LANDFILL

Quality Control Sample Report

-Method Blanks-

Parameter	Units	Results	Date Analyzed
Method 8260B			
Benzene	ug/l	<1	9/11/2019
Bromobenzene	ug/l	<1	9/11/2019
Bromochloromethane	ug/l	<1	9/11/2019
Bromodichloromethane	ug/l	<1	9/11/2019
Bromoform	ug/l	<1	9/11/2019
Bromomethane	ug/l	<5	9/11/2019
n-Butylbenzene	ug/l	<1	9/11/2019
Sec-butylbenzene	ug/l	<1	9/11/2019
tert-Butylbenzene	ug/l	<1	9/11/2019
Carbon Tetrachloride	ug/l	<1	9/11/2019
Chlorobenzene	ug/l	<1	9/11/2019
Chloroethane	ug/l	<1	9/11/2019
Chloroform	ug/l	<1	9/11/2019
Chloromethane	ug/l	<1	9/11/2019
2-Chlorotoluene	ug/l	<1	9/11/2019
4-Chlorotoluene	ug/l	<1	9/11/2019
Dibromochloromethane	ug/l	<1	9/11/2019
1,2-Dibromo-3-Chloropropane	ug/l	<2	9/11/2019
1,2-Dibromoethane(EDB)	ug/l	<1	9/11/2019
Dibromomethane	ug/l	<2	9/11/2019
1,2-Dichlorobenzene	ug/l	<1	9/11/2019
1,3-Dichlorobenzene	ug/l	<1	9/11/2019
1,4-Dichlorobenzene	ug/l	<1	9/11/2019
Dichlorodifluoromethane	ug/l	<1	9/11/2019
1,1-Dichloroethane	ug/l	<1	9/11/2019
1,2-Dichloroethane	ug/l	<1	9/11/2019
1,1-Dichloroethene	ug/l	<1	9/11/2019
cis-1,2-Dichloroethene	ug/l	<1	9/11/2019
trans-1,2-Dichloroethylene	ug/l	<1	9/11/2019
1,2-Dichloropropane	ug/l	<1	9/11/2019
1,3-Dichloropropane	ug/l	<1	9/11/2019
2,2-Dichloropropane	ug/l	<1	9/11/2019
1,1-Dichloropropene	ug/l	<1	9/11/2019
Ethylbenzene	ug/l	<1	9/11/2019
Hexachlorobutadiene	ug/l	<1	9/11/2019
Isopropylbenzene	ug/l	<1	9/11/2019
p-Isopropyltoluene	ug/l	<1	9/11/2019
Methylene Chloride	ug/l	<5	9/11/2019
Naphthalene	ug/l	<1	9/11/2019
n-Propylbenzene	ug/l	<1	9/11/2019
Styrene	ug/l	<1	9/11/2019
1,1,1,2-Tetrachloroethane	ug/l	<1	9/11/2019

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Hoffman Engineering, Inc.

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Project Name: HOPKINTON LANDFILL

1,1,2,2-Tetrachloroethane	ug/l	<1	9/11/2019
Tetrachloroethene	ug/l	<1	9/11/2019
Toluene	ug/l	<1	9/11/2019
1,2,3-Trichlorobenzene	ug/l	<1	9/11/2019
1,2,4-Trichlorobenzene	ug/l	<1	9/11/2019
1,1,1-Trichloroethane	ug/l	<1	9/11/2019
1,1,2-Trichloroethane	ug/l	<1	9/11/2019
Trichloroethene	ug/l	<1	9/11/2019
Trichlorofluoromethane	ug/l	<1	9/11/2019
1,2,3-Trichloropropane	ug/l	<2	9/11/2019
1,2,4-Trimethylbenzene	ug/l	<1	9/11/2019
1,3,5-Trimethylbenzene	ug/l	<1	9/11/2019
Vinyl Chloride	ug/l	<1	9/11/2019
o-Xylene	ug/l	<1	9/11/2019
m,p-Xylene	ug/l	<2	9/11/2019
MTBE	ug/l	<2	9/11/2019
Acetone	ug/l	<10	9/11/2019
Surrogates	RANGE		9/11/2019
Dibromofluoromethane	86-118%	105	9/11/2019
Toluene-d8	88-110%	100	9/11/2019
4-Bromofluorobenzene	86-115%	94	9/11/2019
1,2 Dichloroethane-d4	80-120%	107	9/11/2019
Metals			
Barium	mg/l	<0.050	9/11/2019
Beryllium	mg/l	<0.005	9/11/2019
Chromium	mg/l	<0.050	9/11/2019
Cobalt	mg/l	<0.050	9/11/2019
Copper	mg/l	<0.010	9/11/2019
Nickel	mg/l	<0.050	9/11/2019
Silver	mg/l	<0.050	9/11/2019
Vanadium	mg/l	<0.050	9/11/2019
Zinc	mg/l	<0.10	9/11/2019
Metals by ICP MassSpec			
Antimony	mg/l	<0.002	9/6/2019
Arsenic	mg/l	<0.001	9/6/2019
Cadmium	mg/l	<0.001	9/6/2019
Lead	mg/l	<0.001	9/6/2019
Selenium	mg/l	<0.002	9/6/2019
Thallium	mg/l	<0.001	9/6/2019

R.I. Analytical Laboratories, Inc.
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Hoffman Engineering, Inc.

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Project Name: HOPKINTON LANDFILL

-Laboratory Control Standard-

Parameter	Units	Spike Conc.	Detected Conc.	% Rec.	Date Analyzed
Method 8260B					
Benzene	ug/l	50	52	104	9/11/2019
Bromobenzene	ug/l	50	48	96	9/11/2019
Bromochloromethane	ug/l	50	50	100	9/11/2019
Bromodichloromethane	ug/l	50	48	96	9/11/2019
Bromoform	ug/l	50	53	106	9/11/2019
Bromomethane	ug/l	50	56	112	9/11/2019
n-Butylbenzene	ug/l	50	51	102	9/11/2019
Sec-butylbenzene	ug/l	50	54	108	9/11/2019
tert-Butylbenzene	ug/l	50	56	112	9/11/2019
Carbon Tetrachloride	ug/l	50	54	108	9/11/2019
Chlorobenzene	ug/l	50	52	104	9/11/2019
Chloroethane	ug/l	50	54	108	9/11/2019
Chloroform	ug/l	50	49	98	9/11/2019
Chloromethane	ug/l	50	48	96	9/11/2019
2-Chlorotoluene	ug/l	50	53	106	9/11/2019
4-Chlorotoluene	ug/l	50	51	102	9/11/2019
Dibromochloromethane	ug/l	50	51	102	9/11/2019
1,2-Dibromo-3-Chloropropane	ug/l	50	35	70	9/11/2019
1,2-Dibromoethane(EDB)	ug/l	50	50	100	9/11/2019
Dibromomethane	ug/l	50	50	100	9/11/2019
1,2-Dichlorobenzene	ug/l	50	51	102	9/11/2019
1,3-Dichlorobenzene	ug/l	50	53	106	9/11/2019
1,4-Dichlorobenzene	ug/l	50	54	108	9/11/2019
Dichlorodifluoromethane	ug/l	50	48	96	9/11/2019
1,1-Dichloroethane	ug/l	50	54	108	9/11/2019
1,2-Dichloroethane	ug/l	50	50	100	9/11/2019
1,1-Dichloroethene	ug/l	50	49	98	9/11/2019
cis-1,2-Dichloroethene	ug/l	50	51	102	9/11/2019
trans-1,2-Dichloroethylene	ug/l	50	56	112	9/11/2019
1,2-Dichloropropane	ug/l	50	51	102	9/11/2019
1,3-Dichloropropane	ug/l	50	49	98	9/11/2019
2,2-Dichloropropane	ug/l	50	47	94	9/11/2019
1,1-Dichloropropene	ug/l	50	54	108	9/11/2019
Ethylbenzene	ug/l	50	53	106	9/11/2019
Hexachlorobutadiene	ug/l	50	60	120	9/11/2019
Isopropylbenzene	ug/l	50	54	108	9/11/2019
p-Isopropyltoluene	ug/l	50	54	108	9/11/2019
Methylene Chloride	ug/l	50	50	100	9/11/2019
Naphthalene	ug/l	50	50	100	9/11/2019
n-Propylbenzene	ug/l	50	53	106	9/11/2019
Styrene	ug/l	50	53	106	9/11/2019
1,1,1,2-Tetrachloroethane	ug/l	50	55	110	9/11/2019
1,1,2,2-Tetrachloroethane	ug/l	50	53	106	9/11/2019
Tetrachloroethene	ug/l	50	56	112	9/11/2019
Toluene	ug/l	50	51	102	9/11/2019

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Project Name: HOPKINTON LANDFILL

1,2,3-Trichlorobenzene	ug/l	50	54	108	9/11/2019
1,2,4-Trichlorobenzene	ug/l	50	55	110	9/11/2019
1,1,1-Trichloroethane	ug/l	50	50	100	9/11/2019
1,1,2-Trichloroethane	ug/l	50	45	90	9/11/2019
Trichloroethene	ug/l	50	48	96	9/11/2019
Trichlorofluoromethane	ug/l	50	55	110	9/11/2019
1,2,3-Trichloropropane	ug/l	50	48	96	9/11/2019
1,2,4-Trimethylbenzene	ug/l	50	52	104	9/11/2019
1,3,5-Trimethylbenzene	ug/l	50	52	104	9/11/2019
Vinyl Chloride	ug/l	50	58	116	9/11/2019
o-Xylene	ug/l	50	55	110	9/11/2019
m,p-Xylene	ug/l	100	110	110	9/11/2019
MTBE	ug/l	50	56	112	9/11/2019
Acetone	ug/l	500	320	64	9/11/2019
Surrogates	RANGE				9/11/2019
Dibromofluoromethane	86-118%		104		9/11/2019
Toluene-d8	88-110%		100		9/11/2019
4-Bromofluorobenzene	86-115%		96		9/11/2019
1,2 Dichloroethane-d4	80-120%		102		9/11/2019
Benzene	ug/l	50	52	104	9/11/2019
Bromobenzene	ug/l	50	47	94	9/11/2019
Bromochloromethane	ug/l	50	48	96	9/11/2019
Bromodichloromethane	ug/l	50	48	96	9/11/2019
Bromoform	ug/l	50	53	106	9/11/2019
Bromomethane	ug/l	50	55	110	9/11/2019
n-Butylbenzene	ug/l	50	52	104	9/11/2019
Sec-butylbenzene	ug/l	50	53	106	9/11/2019
tert-Butylbenzene	ug/l	50	54	108	9/11/2019
Carbon Tetrachloride	ug/l	50	53	106	9/11/2019
Chlorobenzene	ug/l	50	52	104	9/11/2019
Chloroethane	ug/l	50	51	102	9/11/2019
Chloroform	ug/l	50	49	98	9/11/2019
Chloromethane	ug/l	50	46	92	9/11/2019
2-Chlorotoluene	ug/l	50	52	104	9/11/2019
4-Chlorotoluene	ug/l	50	50	100	9/11/2019
Dibromochloromethane	ug/l	50	51	102	9/11/2019
1,2-Dibromo-3-Chloropropane	ug/l	50	34	68	9/11/2019
1,2-Dibromoethane(EDB)	ug/l	50	49	98	9/11/2019
Dibromomethane	ug/l	50	50	100	9/11/2019
1,2-Dichlorobenzene	ug/l	50	52	104	9/11/2019
1,3-Dichlorobenzene	ug/l	50	52	104	9/11/2019
1,4-Dichlorobenzene	ug/l	50	53	106	9/11/2019
Dichlorodifluoromethane	ug/l	50	47	94	9/11/2019
1,1-Dichloroethane	ug/l	50	53	106	9/11/2019
1,2-Dichloroethane	ug/l	50	49	98	9/11/2019
1,1-Dichloroethene	ug/l	50	50	100	9/11/2019
cis-1,2-Dichloroethene	ug/l	50	51	102	9/11/2019
trans-1,2-Dichloroethylene	ug/l	50	55	110	9/11/2019
1,2-Dichloropropane	ug/l	50	50	100	9/11/2019
1,3-Dichloropropane	ug/l	50	48	96	9/11/2019

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Project Name: HOPKINTON LANDFILL

2,2-Dichloropropane	ug/l	50	46	92	9/11/2019
1,1-Dichloropropene	ug/l	50	54	108	9/11/2019
Ethylbenzene	ug/l	50	53	106	9/11/2019
Hexachlorobutadiene	ug/l	50	59	118	9/11/2019
Isopropylbenzene	ug/l	50	55	110	9/11/2019
p-Isopropyltoluene	ug/l	50	55	110	9/11/2019
Methylene Chloride	ug/l	50	50	100	9/11/2019
Naphthalene	ug/l	50	49	98	9/11/2019
n-Propylbenzene	ug/l	50	52	104	9/11/2019
Styrene	ug/l	50	52	104	9/11/2019
1,1,1,2-Tetrachloroethane	ug/l	50	53	106	9/11/2019
1,1,2,2-Tetrachloroethane	ug/l	50	52	104	9/11/2019
Tetrachloroethene	ug/l	50	56	112	9/11/2019
Toluene	ug/l	50	51	102	9/11/2019
1,2,3-Trichlorobenzene	ug/l	50	53	106	9/11/2019
1,2,4-Trichlorobenzene	ug/l	50	54	108	9/11/2019
1,1,1-Trichloroethane	ug/l	50	49	98	9/11/2019
1,1,2-Trichloroethane	ug/l	50	46	92	9/11/2019
Trichloroethene	ug/l	50	47	94	9/11/2019
Trichlorofluoromethane	ug/l	50	53	106	9/11/2019
1,2,3-Trichloropropane	ug/l	50	47	94	9/11/2019
1,2,4-Trimethylbenzene	ug/l	50	51	102	9/11/2019
1,3,5-Trimethylbenzene	ug/l	50	51	102	9/11/2019
Vinyl Chloride	ug/l	50	57	114	9/11/2019
o-Xylene	ug/l	50	54	108	9/11/2019
m,p-Xylene	ug/l	100	110	110	9/11/2019
MTBE	ug/l	50	54	108	9/11/2019
Acetone	ug/l	500	270	54	9/11/2019
Surrogates	RANGE				9/11/2019
Dibromofluoromethane	86-118%		102		9/11/2019
Toluene-d8	88-110%		101		9/11/2019
4-Bromofluorobenzene	86-115%		92		9/11/2019
1,2 Dichloroethane-d4	80-120%		101		9/11/2019

Metals

Barium	mg/l	1.00	0.990	99	9/11/2019
Beryllium	mg/l	1.00	1.04	104	9/11/2019
Chromium	mg/l	1.00	1.02	102	9/11/2019
Cobalt	mg/l	1.00	0.937	94	9/11/2019
Copper	mg/l	1.00	1.02	102	9/11/2019
Nickel	mg/l	1.00	0.991	99	9/11/2019
Silver	mg/l	1.00	0.964	96	9/11/2019
Vanadium	mg/l	1.00	1.07	107	9/11/2019
Zinc	mg/l	1.00	1.01	101	9/11/2019
Barium	mg/l	1.00	0.973	97	9/11/2019
Beryllium	mg/l	1.00	1.06	106	9/11/2019
Chromium	mg/l	1.00	1.04	104	9/11/2019
Cobalt	mg/l	1.00	0.953	95	9/11/2019
Copper	mg/l	1.00	1.04	104	9/11/2019
Nickel	mg/l	1.00	1.00	100	9/11/2019
Silver	mg/l	1.00	0.980	98	9/11/2019

R.I. Analytical Laboratories, Inc.
Laboratory Report

Hoffman Engineering, Inc.

Work Order #: 1909-16582

Project Name: HOPKINTON LANDFILL

Vanadium	mg/l	1.00	1.09	109	9/11/2019
Zinc	mg/l	1.00	1.02	102	9/11/2019
Metals by ICP MassSpec					
Antimony	mg/l	0.050	0.057	114	9/6/2019
Arsenic	mg/l	0.050	0.051	102	9/6/2019
Cadmium	mg/l	0.050	0.054	108	9/6/2019
Lead	mg/l	0.050	0.054	108	9/6/2019
Selenium	mg/l	0.050	0.051	102	9/6/2019
Thallium	mg/l	0.050	0.040	80	9/6/2019
Antimony	mg/l	0.050	0.057	114	9/6/2019
Arsenic	mg/l	0.050	0.051	102	9/6/2019
Cadmium	mg/l	0.050	0.054	108	9/6/2019
Lead	mg/l	0.050	0.053	106	9/6/2019
Selenium	mg/l	0.050	0.050	100	9/6/2019
Thallium	mg/l	0.050	0.043	86	9/6/2019

CHAIN OF CUSTODY RECORD

R.I. Analytical Laboratories, Inc.

41 Illinois Avenue
Warwick, RI 02888
Tel: 800-937-2580
Fax: 401-738-1970

131 Coolidge St, Bldg. 2
Hudson, MA 01749
Tel: 888-228-3334
Fax: 978-568-0078

Date Collected	Time Collected	Field Sample Identification	Grab or Composite	# of Containers & Type T	Preservation Code P	Matrix Code M	VOC 8260	Total Metals (15 Solid Waste)
9/3/2019		MW-5	G	1P/2V	N/H CL	GW	X	X
8/30/19		MW-7	G	1P/2V	N/H CL	GW	X	X

Client Information		Project Information			
Company Name:	Hoffman Engineering	Project Name:	Hopkington Landfill		
Address:	640 Ten Rod Road	P.O. Number:		Project Number:	
City / State / Zip:	North Kingstown, RI 02852	Report To:	Robert Hoffman	Phone:	Fax:
Telephone:	401-294-9032 Fax	Sampled by:	Anthony Gomez		
Contact Person:	Robert Hoffman	Quote No:		Email address:	Hoffmanengineering@verizon.net

Relinquished By	Date	Time	Received By	Date	Time
[signature]	9/3/19	1656	[signature]	9/3/19	1656

Turn Around Time

- Normal
- X EMAIL Report
- X 5 Business days. Possible surcharge
- Rush _

Project Comments

Circle if applicable: GW-1, GW-2, GW-3, S-1, S-2, S-3 MCP Data Enhancement QC Package? Yes No

Coliform results absent or present, Please present to RIDOH.

3.5°C

Lab Use Only

- Sample Pick Up Only
- RIAL sampled; attach field hours
- Y Shipped on ice

Workorder No: 1909-16582

Matrix Codes: GW=Groundwater, SW=Surface Water, WW=Wastewater, DW=Drinking Water, S=Soil, Sl=Sludge, A=Air, B=Bulk/Solid, O=_____

APPENDIX 4
DRAFT ENVIRONMENTAL LAND USAGE RESTRICTION

ENVIRONMENTAL LAND USAGE RESTRICTION

This Declaration of Environmental Land Usage Restriction ("Restriction") is made on this _____ day of _____, 20___ by **Town of Hopkinton**, and their successors and/or assigns (hereinafter, the "Grantor").

WITNESSETH:

WHEREAS, the Grantor Town of Hopkinton is the Owner in fee simple of certain real property identified as **Plat 13, Lot 27, 0 Stubtown Road, in Hopkinton, Rhode Island** (the "Property"), more particularly described in Exhibit A (Town of Hopkinton, RI Tax Map) which is attached hereto and made a part hereof;

WHEREAS, the Property contains a solid waste landfill which was capped with a High Density Polyethylene membrane and covered with soil. The limits of this landfill are shown on Exhibit B, denoted with GPS Coordinates, which is attached hereto;

WHEREAS, the Grantor and the Department have determined that the Environmental Land Usage restrictions set forth below are consistent with the regulations adopted by the Rhode Island Department of Environmental Management ("Department") pursuant to R.I.G.L. § 23-19.14-1 and that this restriction shall be a Conservation Restriction pursuant to R.I.G.L. § 34-39--1 et. seq. and shall not be subject to the 30 year limitation provided in R.I.G.L. § 34-4-21;

WHEREAS, the Department's written approval of the remediation and closure of said landfill is contained in the document entitled: Remedial Decision Letter, dated December 17, 2007 issued pursuant to the Remediation Regulations and the Solid Waste Regulations;

WHEREAS, to prevent exposure to or migration of Hazardous Substances and to abate hazards to human health and/or the environment, and in accordance with the **Remedial Decision Letter**, the Grantor desires to impose certain restrictions upon the use, occupancy, and activities of and at the **Property**;

WHEREAS, the Grantor believes that these Restrictions will effectively protect public health and the environment from such contamination; and

WHEREAS, the Grantor intends that such restrictions shall run with the land and be binding upon and enforceable against the Grantor and the Grantor's successors and assigns.

NOW, THEREFORE, Grantor agrees as follows:

A. Restrictions Applicable to the Property: In accordance with the **Remedial Decision Letter**, the use, occupancy and activity of and at the **Property** is restricted as follows:

i. No residential use of the **Property** shall be permitted that is contrary to Department approvals and restrictions contained herein;

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ii. No groundwater at the **Property** shall be used as potable water;

iii. No soil at the **Property** shall be disturbed in any manner without written permission of the Department's Office of Waste Management, except as permitted in the Soil Management Plan (SMP) approved by the Department in a written approval letter dated _____(date) Exhibit B and attached hereto;

iv. Humans engaged in activities at the **Property** shall not be exposed to soils containing Hazardous Materials and/or petroleum in concentrations exceeding the applicable Department approved Direct Exposure Criteria set forth in the Remediation Regulations;

v. The engineered controls at the **Property** described in the **Soil Management Plan (SMP)** contained in Exhibit C attached hereto shall not be disturbed and shall be properly maintained to prevent humans engaged in **industrial/commercial** activity from being exposed to soils containing Hazardous Materials and/or petroleum in concentrations exceeding the applicable Department-approved **industrial/commercial** Direct Exposure Criteria in accordance with the Remediation Regulations; and

B. No action shall be taken, allowed, suffered, or omitted at the **Property if such action or omission is reasonably likely to:**

i. Create a risk of migration of Hazardous Materials and/or petroleum;
ii. Create a potential hazard to human health or the environment; or
iii. Result in the disturbance of any engineering controls utilized at the **Property**, except as permitted in the Department-approved **SMP** contained in Exhibit C.

C. Emergencies: In the event of any emergency which presents a significant risk to human health or to the environment, including but not limited to, maintenance and repair of utility lines or a response to emergencies such as fire or flood, the application of Paragraphs A (iii.-v.) and B above may be suspended, provided such risk cannot be abated without suspending such Paragraphs and the Grantor complies with the following:

i. Grantor shall notify the Department's Office of Waste Management in writing of the emergency as soon as possible but no more than three (3) business days after Grantor's having learned of the emergency. (This does not remove Grantor's obligation to notify any other necessary state, local or federal agencies.);

ii. Grantor shall limit both the extent and duration of the suspension to the minimum period reasonable and necessary to adequately respond to the emergency;

iii. Grantor shall implement reasonable measures necessary to prevent actual, potential, present and future risk to human health and the environment resulting from such suspension;

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iv. Grantor shall communicate at the time of written notification to the Department its intention to conduct the Emergency Response Actions and provide a schedule to complete the Emergency Response Actions;

v. Grantor shall continue to implement the Emergency Response Actions, on the schedule submitted to the Department, to ensure that the **Property** is remediated in accordance with the Remediation Regulations (or applicable variance) or restored to its condition prior to such emergency. Based upon information submitted to the Department at the time the ELUR was recorded pertaining to known environmental conditions at the **Property**, emergency maintenance and repair of utility lines shall only require restoration of the **Property** to its condition prior to the maintenance and repair of the utility lines; and

vi. Grantor shall submit to the Department, within ten (10) days after the completion of the Emergency Response Action, a status report describing the emergency activities that have been completed.

D. Release of Restriction; Alterations of Subject Area: The Grantor shall not make, or allow or suffer to be made, any alteration of any kind in, to, or about any portion of the **Property** inconsistent with this Restriction unless the Grantor has received the Department's prior written approval for such alteration. If the Department determines that the proposed alteration is significant, the Department may require the amendment of this Restriction. Alterations deemed insignificant by the Department will be approved via a letter from the Department. The Department shall not approve any such alteration and shall not release the **Property** from the provisions of this Restriction unless the Grantor demonstrates to the Department's satisfaction that Grantor has managed the **Property** in accordance with applicable regulations.

E. Notice of Lessees and Other Holders of Interests in the Property: The Grantor, or any future holder of any interest in the **Property**, shall cause any lease, grant, or other transfer of any interest in the **Property** to include a provision expressly requiring the lessee, grantee, or transferee to comply with this Restriction. The failure to include such provision shall not affect the validity or applicability of this Restriction to the **Property**.

F. Enforceability: If any court of competent jurisdiction determines that any provision of this Restriction is invalid or unenforceable, the Grantor shall notify the Department in writing within fourteen (14) days of such determination.

G. Binding Effect: All of the terms, covenants, and conditions of this Restriction shall run with the land and shall be binding on the Grantor, its successors and assigns, and each Owner and any other party entitled to control, possession or use of the **Property** during such period of ownership or possession.

H. Inspection & Non-Compliance: It shall be the obligation of the Grantor, or any future holder of any interest in the **Property**, to provide for annual inspections of the **Property** for compliance with the ELUR in accordance with Department requirements.

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A qualified environmental professional will, on behalf of the Grantor or future holder of any interest in the **Property**, evaluate the compliance status of the **Property** on an annual basis. Upon completion of the evaluation, the environmental professional will prepare and simultaneously submit to the Department and to the Grantor or future holder of any interest in the **Property** an evaluation report detailing the findings of the inspection, and noting any compliance violations at the **Property**. If the **Property** is determined to be out of compliance with the terms of the ELUR, the Grantor or future holder of any interest in the **Property** shall submit a corrective action plan in writing to the Department within ten (10) days of receipt of the evaluation report, indicating the plans to bring the **Property** into compliance with the ELUR, including, at a minimum, a schedule for implementation of the plan.

In the event of any violation of the terms of this Restriction, which remains uncured more than ninety (90) days after written notice of violation, all Department approvals and agreements relating to the **Property** may be voided at the sole discretion of the Department.

I. Terms Used Herein: The definitions of terms used herein shall be the same as the definitions contained in Section 3 (DEFINITIONS) of the Remediation Regulations.

IN WITNESS WHEREOF, the Grantor has hereunto set (his/her) hand and seal on the day and year set forth above.

Town of Hopkinton

By: _____ _____

Grantor (signature) Grantor (typed name)

STATE OF _____

COUNTY OF _____

In (_____), in said County and State, on the _____ day of _____, 20___, before me Personally appeared _____, to me known and known by me to be the party executing the foregoing instrument and (he/she) acknowledged said instrument by (him/her) executed to be (his/her) free act and deed.

Notary Public: _____

My Comm. Expires: _____

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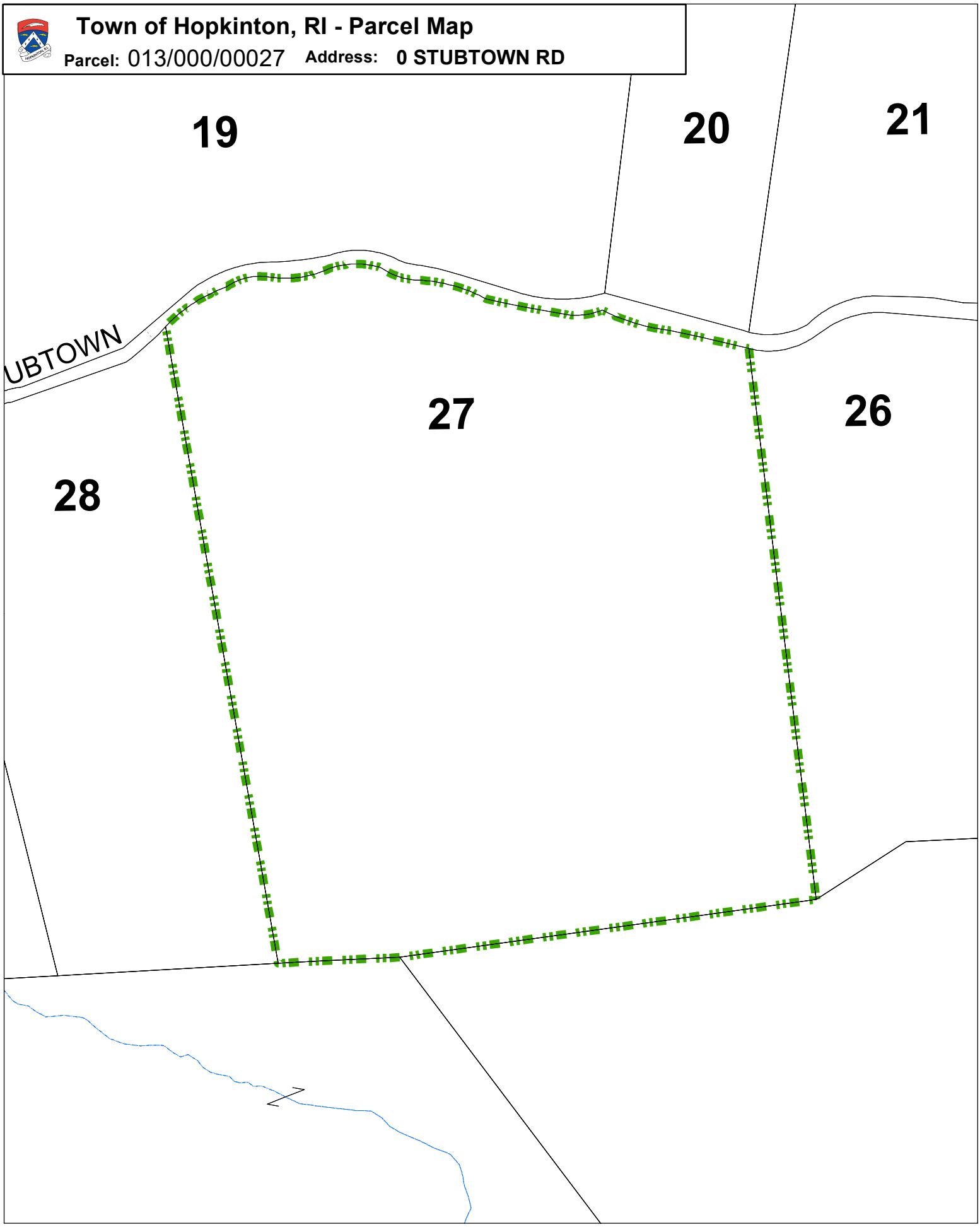
EXHIBIT A

Hopkinton Tax Map

Town of Hopkinton, RI - Parcel Map

Parcel: 013/000/00027 **Address:** **0 STUBTOWN RD**



Approximate Scale:

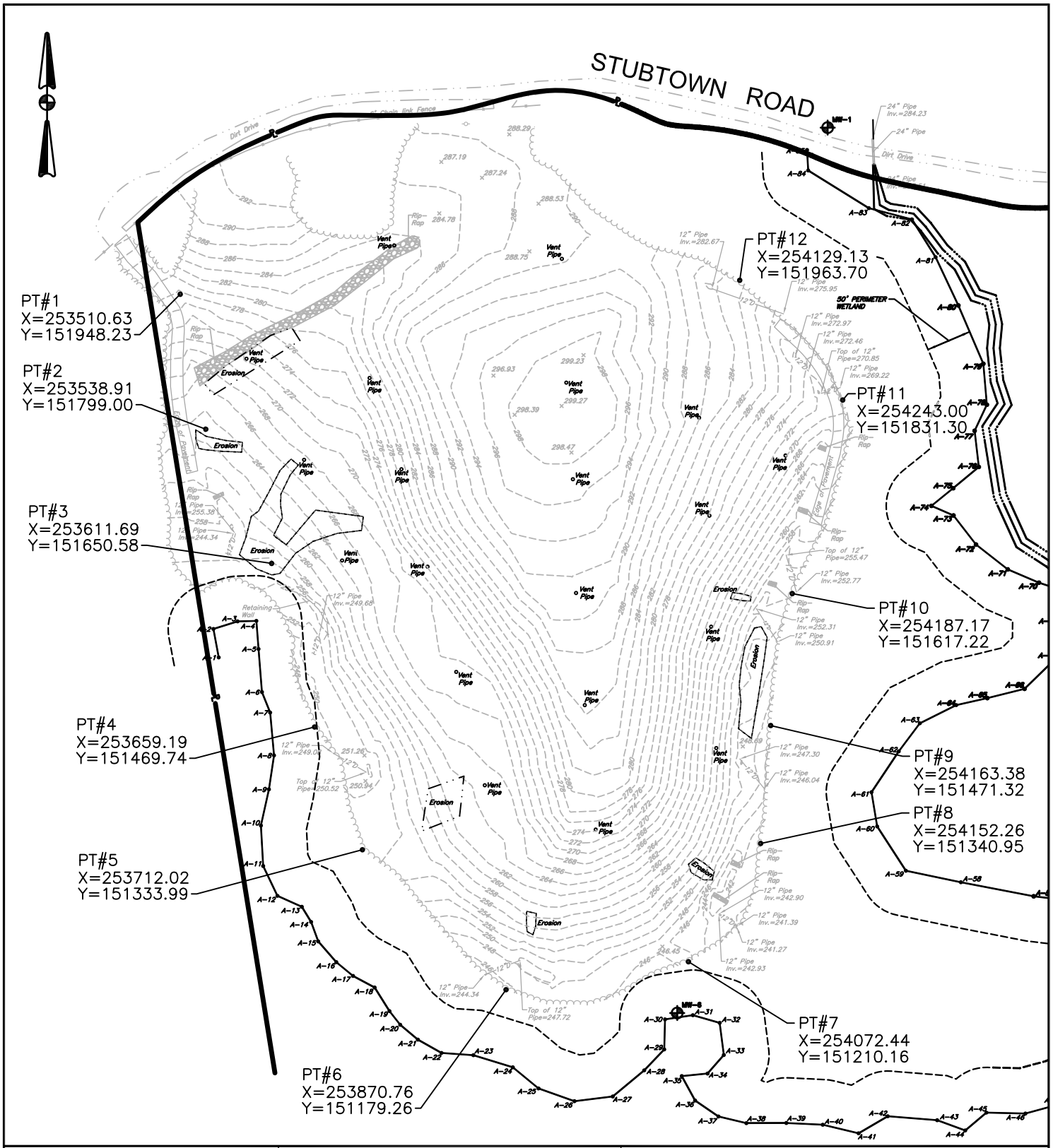
1 inch = 300 feet

Disclaimer:
This map is for informational purposes only. All information is subject to verification by any user.
The Town of Hopkinton and its mapping contractors assume no legal responsibility for the information contained herein.

Map Produced
July 2019

EXHIBIT B

Site Plan



- Civil
- Transportation
- Environmental
- Site Planning
- Surveying
- Permitting
- Landscape Architecture

CROSSMAN ENGINEERING

Rhode Island
151 Centerville Road
Warwick, RI 02886
Phone: (401) 738-5660

Massachusetts
103 Commonwealth Avenue
North Attleboro, MA 02763
Phone: (508) 695-1700

Email: cei@crossmaneng.com

PROJECT TITLE:

EXHIBIT - B
HOPKINTON LANDFILL

A.P. 13, LOT 27
STUBTOWN ROAD
HOPKINTON, RI

PREPARED FOR:

TOWN OF HOPKINTON
1 TOWN HOUSE ROAD
HOPKINTON, RHODE ISLAND 02833

DATE: NOV. 2019

SCALE: 1"=150'

REVISIONS:

EXHIBIT C

Soil Management Plan

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EXHIBIT C

SOIL MANAGEMENT AND CONTINGENCY PLAN

Hopkinton Landfill Phase II
Hopkinton, Rhode Island
Plat 13, Lot 27

This Soils Management Plan (SMP) has been prepared to establish procedures that will be followed to maintain the landfill cap at the subject Site. This landfill is commonly referred to as Hopkinton Stubtown Road Phase II and is located at the terminus of Stubtown Road in Hopkinton, Rhode Island.

As such, this plan will be implemented if the HDPE cap needs to be repaired. The plan serves to supplement, and will be initiated by, the RIDEM notification requirement established in the Environmental Land Usage Restriction (ELUR) for the property.

The waste footprint currently covers approximately 11.3 acres of a 52 acre parcel that is owned by the Town of Hopkinton. The limits of the HDPE cap are approximated by the GPS coordinates provided on Exhibit B. Due to the presence of buried solid waste, the ELUR prohibits future residential Site use or redevelopment without approval of the RI Department of Environmental Management. Engineering controls are required for the entire area containing solid waste. The following section describes those controls and required maintenance activities in detail.

The ELUR defines the boundaries of the Property subject to this SMP.

DESCRIPTION AND MAINTENANCE OF ENGINEERED CONTROL

The engineered controls are an integral part of the ELUR and must be maintained to ensure potential human exposure to solid waste is minimized. The engineered controls at the Site consist of three main components:

1. Landfill Cap: The landfill cap consists of a 60 ml High-density Polyethylene Cap covered by approximately 18 to 20 inches of clean soil. The soil cover includes a final layer of organic soil (loam) to support vegetative growth and control erosion and direct exposure risks. The landfill cap has been re-graded to meet RIDEM's minimum drainage slope (i.e., 3 to 5%) a maximum stable slope (i.e. 3:1) which is

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required to control erosion, reduce infiltration, and manage stormwater drainage.

2. Methane vents consisting of gooseneck PVC vents placed through the cap to vent any accumulated gasses beneath the cap.
3. Stormwater drainage swales at the base of the slope to assist in the control of runoff to the adjacent wetlands. These swales consist of crushed stone to allow sedimentation of fines.

In order to maintain the aforementioned Engineered Controls the following steps must be taken as part of routing maintenance:

1. The cap should be mowed as needed to prevent large vegetation (e.g., shrubs and trees) greater than 1" in girth from growing thus minimizing the potential for root damage to the cap. Any areas of erosion control shall be repaired as needed in a timely manner.
2. The goosenecks shall be replaced as necessary due to sun and other degradation of the PVC.
3. The stormwater drainage swales must be cleared of vegetations and accumulated sediment as needed.

As part of the on-going maintenance activities, the groundwater and soil gas monitoring well network shall be maintained to allow periodic monitoring as part of the on-going landfill closure requirements. Access roads shall be mowed and maintained to theses apparatus as needed.

If excavation, disturbance of the structural integrity of the engineered controls, or any other activity inconsistent with the requirements of the ELUR is required at the Site (e.g., utility construction, maintenance, and/or repair, emergencies, etc.) the RIDEM will be notified in writing prior to the work, or in the case of an emergency, as soon as possible but no more than three (3) business days after the emergency. As stated in Paragraph C of the ELUR, in the case of an emergency, the restrictions detailed in Paragraphs A (items III thru vii) and B of the ELUR maybe suspended without first notifying RIDEM. In the case of scheduled excavation and/or construction, maintenance, or repair of utilities, the restrictions detailed in Paragraphs A and B of the ELUR may be temporarily suspended; however, RIDEM will be notified in writing, and a construction plan will be provided, prior to the proposed work. The basic health and safety procedures outlined in this SMP will be followed for excavation work conducted within the ELUR area.

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In the event of an environmental emergency the following agencies/individuals will be notified, as appropriate:

Response Agency	Phone Number
Police	911 or (401) 231-4210
Fire	911 or (401) 351-1600
Ambulance	911
RIDEM/Office of Compliance & Inspection/Emergency Response Program	(401) 222-1360 or (401) 222-3070 (non-business hours)
USEPA/Hazardous Materials Spills	(800) 424-8802
National Response Center	(800) 424-8802
Poison Control Center	(800) 562-8236
HEI's Health and Safety Officer	Robert Hoffman (401) 294-9032 office (401) 741-5400 cell

BASIC HEALTH AND SAFETY PROCEDURES

In the unlikely event that emergency repairs need to made to the actual landfill cap overlying the capped refuse the following basic health and safety procedures outlined below will be implemented while performing excavation and/or work within the Landfill Refuse Area of the Site. The procedures are intended as a general guideline for basic, short-term excavation and maintenance activities. The contractor conducting the work will be required to follow a health and safety plan developed in accordance with the OSHA requirements contained in 29 CFR Part 1910.120.

Based on the documented Site conditions, the potential routes of exposure to on-site excavation workers include dermal contact (absorption) or accidental ingestion of impacted soil and solid waste, and the possible injection of contaminants through broken skin. As contaminants present at the Site are not generally volatile in nature, inhalation hazards are not anticipated. Utilization of the appropriate personal protective equipment (PPE) and the general safety guidelines provided below will minimize the potential for worker exposure while performing work within the ELUR area.

Personal Protective Equipment (PPE)

In general, the level of protection that will be used by workers will be determined by the task that the person is performing; however, at a minimum Level D PPE will be worn at all times while performing excavation activities within the ELUR area. Level D PPE will, at a minimum, consist of the following PPE:

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1. Steel-toe work boots with over-boots as needed;
2. Eye Protection (safety glasses or chemical splash goggles);
3. Nitrile gloves/inner latex or PVC gloves, as needed;
4. Leather gloves;
5. Hard hat;
6. High Visibility Safety Vest; and
7. Work coveralls, as needed.

If Level C or higher level of PPE is determined to be necessary to complete a specific task, a Site-specific health and safety plan will be developed for the work to be performed prior to its initiation.

All contractors and/or workers involved with the soils or waste excavated from within the waste footprint area must be trained in accordance with appropriate OSHA standards.

Site Operating Procedures/Safety Guidelines

Regardless of the level of PPE necessary to complete work in the ELUR area, the following general health and safety guidelines will be followed during the performance of any excavation activities conducted within the ELUR area. Adherence to these guidelines will reduce the potential worker exposure to impacted media.

1. All work conducted on-Site shall be coordinated through a construction manager hired by the site owner to be responsible for the implementation of the requirements of this SMP (including all health and safety procedures);
2. The location of all utilities in the vicinity of the excavation will be established prior to beginning work;
3. All spectators will remain outside the designated Dynamic Exclusion Zone (established as a 50 foot perimeter beyond the area of excavation);
4. A pre-work meeting will be conducted at the beginning of each day to discuss the health and safety procedures and any issues specific to that days work;
5. Practice contamination avoidance: never sit down or kneel in an excavation; never lay equipment on the ground; avoid obvious sources of contamination such as puddles; and avoid unnecessary contact with objects in an excavation;
6. Be alert to any unusual changes in your physical condition; never ignore warning signs. Notify the construction manager as to suspected exposures;
7. All equipment used in an excavation shall be properly cleaned and maintained in good working order. Equipment shall be inspected for signs of defect and/or contamination before use;

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8. Eating, drinking, chewing gum, and smoking shall be prohibited in active excavation areas; and
9. The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated shall result in the evacuation of site personnel from the excavation and the re-evaluation of the hazard and the level of protection.

In Case of Serious Exposure or Injury

In the event of serious chemical exposure or worker injury, the construction manager will immediately be alerted. This person will follow the steps indicated below:

1. Summon appropriate emergency response agency by using the emergency phone numbers provided below and convey the following information:

    a. Nature of emergency,
    b. Location of victim,
    c. Specific information about exposure or accident (gases, chemical, asphyxiation, etc.),
    d. Length of exposure, and
    e. Hazards which may be involved in rescue or treatment;

2. If taken to a hospital, notify the hospital of the background of the problem;
    a. Potential for hospital contamination,
    b. Any contaminated items and the nature of the contamination, and
    c. Estimated arrival time.

3. Follow additional documented procedures for reporting injuries or accidents.

Emergency Phone Numbers

Emergency telephone numbers and the directions to the nearest hospital are included below.

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Response Agency	Phone Number
Ambulance	911 or (401) 886-8686
Police	911 or (401) 886-8640
Fire	911 or (401) 886-8686
RIDEM/Office of Compliance & Inspection/Emergency Response Program	(401) 222-1360 or (4010)222-3070 (non-business hours)
USEPA/Hazardous Material Spills	(800) 424-8802
National Response Center	(800) 424-8802
Poison Control Center	(800) 562-8236
Dig Safe (Utility Clearance)	1-888-DIGSAFE
Hospital	
Westerly Hospital 25 Wells Street Westerly, RI 02891	(401) 444-4000
Route to Hospital	
Head east on Stubtown Road for 1.1 miles; Turn right onto Canonchet Road, head south for 1.0 miles; Turn right onto RI Route 3 South, drive for 3.2 miles; Merge onto I-95 South, drive for 3.6 miles; Take Exit 92, drive for 0.2 miles; Turn left onto CT-49 South, drive for 1.3 miles; Turn left onto CT-2 East, drive for 2.0 miles; Turn left onto West Broad Street, drive for 0.1 miles; West Broad Street turns right and becomes Main Street, drive for 0.6 miles; Turn left onto Beach Street, drive for 0.6 miles; Turn left onto Wells Street, drive for 0.1 miles; Destination will be to the right.	

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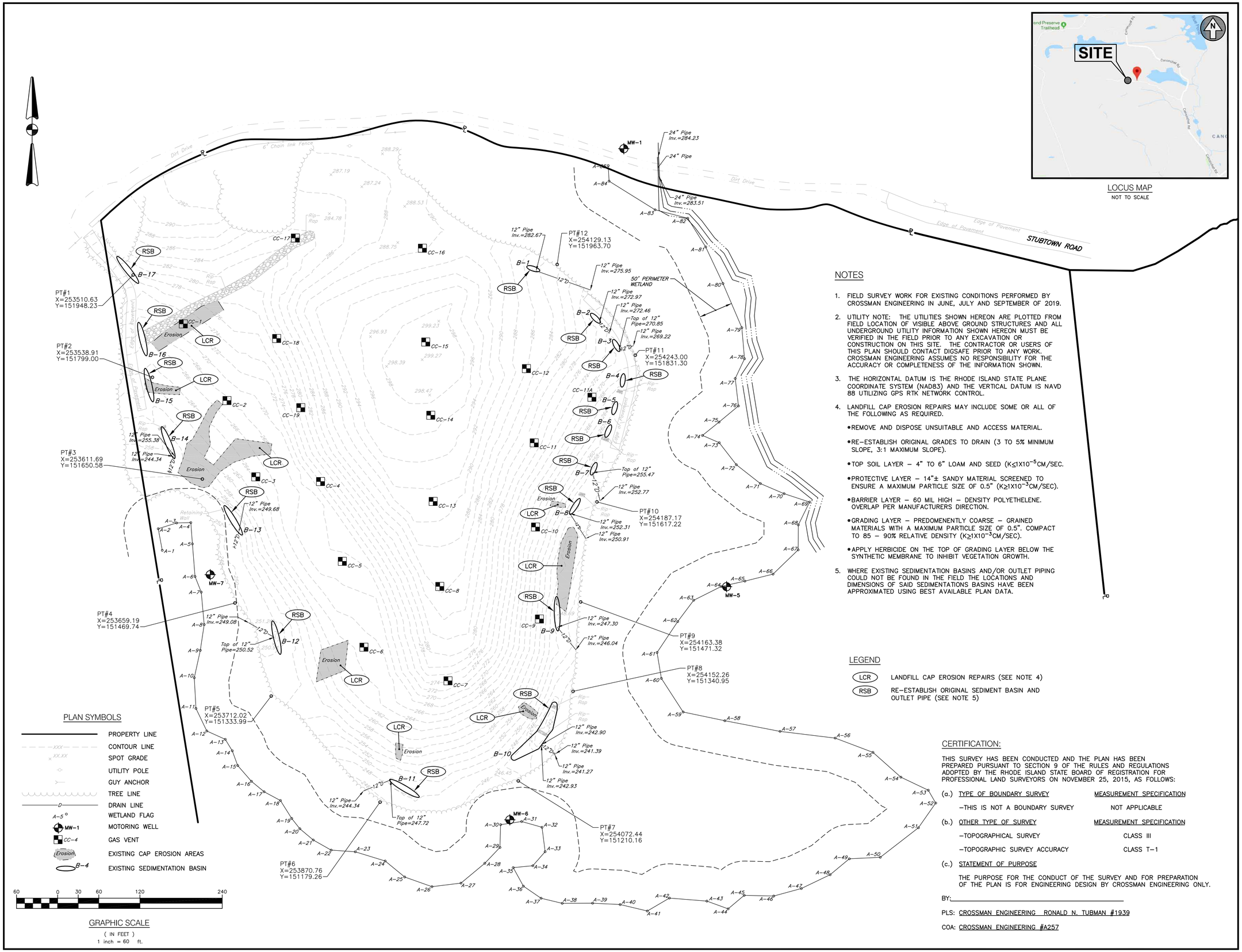
APPENDIX 5
SITE IMPROVEMENT PLAN



LOCUS MAP

NOT TO SCALE

NOTES

1. FIELD SURVEY WORK FOR EXISTING CONDITIONS PERFORMED BY CROSSMAN ENGINEERING IN JUNE, JULY AND SEPTEMBER OF 2019.
2. UTILITY NOTE: THE UTILITIES SHOWN HEREON ARE PLOTTED FROM FIELD LOCATION OF VISIBLE ABOVE GROUND STRUCTURES AND ALL UNDERGROUND UTILITY INFORMATION SHOWN HEREON MUST BE VERIFIED IN THE FIELD PRIOR TO ANY EXCAVATION OR CONSTRUCTION ON THIS SITE. THE CONTRACTOR OR USERS OF THIS PLAN SHOULD CONTACT DIGSAFE PRIOR TO ANY WORK. CROSSMAN ENGINEERING ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN.
3. THE HORIZONTAL DATUM IS THE RHODE ISLAND STATE PLANE COORDINATE SYSTEM (NAD83) AND THE VERTICAL DATUM IS NAVD 88 UTILIZING GPS RTK NETWORK CONTROL.
4. LANDFILL CAP EROSION REPAIRS MAY INCLUDE SOME OR ALL OF THE FOLLOWING AS REQUIRED.
   - REMOVE AND DISPOSE UNSUITABLE AND ACCESS MATERIAL.
   - RE-ESTABLISH ORIGINAL GRADES TO DRAIN (3 TO 5% MINIMUM SLOPE, 3:1 MAXIMUM SLOPE).
   - TOP SOIL LAYER – 4" TO 6" LOAM AND SEED ($K \leq 1X10^{-5}$CM/SEC.
   - PROTECTIVE LAYER – 14"± SANDY MATERIAL SCREENED TO ENSURE A MAXIMUM PARTICLE SIZE OF 0.5" ($K \geq 1X10^{-3}$CM/SEC).
   - BARRIER LAYER – 60 MIL HIGH – DENSITY POLYETHELENE. OVERLAP PER MANUFACTURERS DIRECTION.
   - GRADING LAYER – PREDOMENENTLY COARSE – GRAINED MATERIALS WITH A MAXIMUM PARTICLE SIZE OF 0.5". COMPACT TO 85 – 90% RELATIVE DENSITY ($K \geq 1X10^{-3}$CM/SEC).
   - APPLY HERBICIDE ON THE TOP OF GRADING LAYER BELOW THE SYNTHETIC MEMBRANE TO INHIBIT VEGETATION GROWTH.
5. WHERE EXISTING SEDIMENTATION BASINS AND/OR OUTLET PIPING COULD NOT BE FOUND IN THE FIELD THE LOCATIONS AND DIMENSIONS OF SAID SEDIMENTATIONS BASINS HAVE BEEN APPROXIMATED USING BEST AVAILABLE PLAN DATA.

LEGEND

LCR	LANDFILL CAP EROSION REPAIRS (SEE NOTE 4)
RSB	RE-ESTABLISH ORIGINAL SEDIMENT BASIN AND OUTLET PIPE (SEE NOTE 5)

PLAN SYMBOLS

	PROPERTY LINE
XXX	CONTOUR LINE
XX.XX	SPOT GRADE
	UTILITY POLE
	GUY ANCHOR
	TREE LINE
D	DRAIN LINE
A-5°	WETLAND FLAG
MW-1	MOTORING WELL
CC-4	GAS VENT
Erosion	EXISTING CAP EROSION AREAS
B-4	EXISTING SEDIMENTATION BASIN

60 0 30 60 120 240

GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

CERTIFICATION:

THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO SECTION 9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON NOVEMBER 25, 2015, AS FOLLOWS:

(a.) TYPE OF BOUNDARY SURVEY	MEASUREMENT SPECIFICATION
–THIS IS NOT A BOUNDARY SURVEY	NOT APPLICABLE
(b.) OTHER TYPE OF SURVEY	MEASUREMENT SPECIFICATION
–TOPOGRAPHICAL SURVEY	CLASS III
–TOPOGRAPHIC SURVEY ACCURACY	CLASS T–1

(c.) STATEMENT OF PURPOSE

THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR PREPARATION OF THE PLAN IS FOR ENGINEERING DESIGN BY CROSSMAN ENGINEERING ONLY.

BY:_____

PLS: CROSSMAN ENGINEERING RONALD N. TUBMAN #1939

COA: CROSSMAN ENGINEERING #A257

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

CROSSMAN ENGINEERING

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THESE DRAWINGS ARE THE PROPERTY OF CROSSMAN ENGINEERING AND HAVE BEEN PREPARED FOR THEIR CLIENT FOR A SPECIFIC SITE AND PROJECT. THESE DRAWINGS ARE NOT TO BE COPIED OR USED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN CONSENT OF CROSSMAN ENGINEERING.

PROJECT TITLE:

HOPKINTON LANDFILL
PHASE II
STUBTOWN ROAD
HOPKINTON, RHODE ISLAND

PREPARED FOR:

TOWN OF HOPKINTON
1 TOWN HOUSE ROAD
HOPKINTON, RI
02833

DRAWING TITLE:

SITE IMPROVEMENT PLAN

DATE: DECEMBER 2019

SCALE: 1" = 60'

DWG. NAME: 2349–SITE IMPROVEMENT.dwg

REVISIONS

NUMBER	REMARKS	DATE

DRAWING NUMBER

C1

SHEET: 1 OF: 1

APPENDIX 6
RIDEM LETTER DATED MARCH 19, 2019

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WASTE MANAGEMENT
235 Promenade Street, Room 380
Providence, Rhode Island 02908

March 19, 2019

Jim Lamphere
Hopkinton Town Planner
Town of Hopkinton
Hopkinton, RI 02833

RE: Outstanding Hopkinton Landfill Closure Requirements and Proposed Solar Post Closure Use

Dear Mr. Lamphere:

This Office has reviewed the materials you sent us, as well as our files relative to the status of the Hopkinton Landfill. Specifically you are interested in the steps necessary to place solar panels on the landfill in compliance with our Solid Waste Regulations 1 and 2 (found at: https://rules.sos.ri.gov/regulations/part/250-140-05-1 and (https://rules.sos.ri.gov/regulations/part/250-140-05-2) hereafter the *Regulations*.

Our comments here focus on the capped landfill known as Phase II that you are considering for a solar project at that time. The older landfill, Phase I will need to complete closure under our Landfill Closure Program, including submission of a Remedial Action Workplan (RAWP) in order for us to consider any post closure use of that site. The RAWP will need to address the remedy approved in the Remedial Decision Letter (RDL) issued by the Department in December of 2007. If you are interested in pursuing solar or other reuse alternatives for Phase I, please contact Kasie McKenzie at 401-222-2797 ext. 7177 or Kasandra.McKenzie@dem.ri.gov.

Both your submittals and our files indicate that on July 7, 2000, the Town submitted to the Department a certification that the Phase II Landfill had been closed in accordance with the Closure Plan approved by the Department in 1994. We believe that this documentation is the best available information about cap construction that exists. Therefore, we believe the most pragmatic approach would be to move forward with the following steps to bring and/or keep the site in compliance with the *Regulations:*

Actions Necessary to Keep the Site in Compliance Irrespective of Future Use

1. Removal of surface debris and/or improvement of signage and fencing to minimize exposure of the public to waste in and around the landfill.
2. Repairs and Maintenance:
    a. Repair damage to the cap from erosion.
    b. Repair stormwater control structures.
    c. Repair and secure groundwater monitoring wells.
    d. Remove trees and shrubs

3. Semi-annual groundwater monitoring should be restarted as soon as possible in accordance with the approved plan.
4. Annual gas monitoring to ensure that methane gas levels do not exceed 25% LEL at property boundaries.
5. Annual inspection should be performed on the cap to ensure compliance with the *Regulations* and the approved plans.
6. An evaluation of the surface water impact of any discharges from the landfill.
7. Filing of an Environmental Land Use Restriction (ELUR) with the town to limit the future use of the property (if this has not already been done).

Actions Necessary to Proceed with Placement of a Solar Array

1. An evaluation, by a Registered Professional Engineer of what maintenance and repairs may be necessary on the following items prior to construction:
    A. Drainage system and related stormwater control structures, including any systems impacted by settlement or sedimentation (swales and downchutes).
    B. Erosion and sedimentation that has taken place and any remedial measures to fix it.
    C. Gas collection and control systems including damage that may have been caused by settlement.
    D. Leachate collection and control systems.
2. Prepare a Closure Plan Modification Request regarding proposed Solar Placement. This request should include the following items:
    A. An evaluation of the effect of the proposed post development conditions on the volume of runoff, the peak discharge and the time to peak.
    B. A sedimentation and erosion control plan for the subject site.
    C. A detailed analysis of the potential impacts of the proposed solar system and structures on the landfill cap, leachate collection system and side slopes and an analysis of their stability and load bearing capacity. This should include the load on the liner of the equipment and vehicles used to install the system.
    D. Include any modifications that will be needed for the existing post closure landfill environmental monitoring plan, focusing on the landfill gas monitoring.
3. Include an operation, monitoring and maintenance manual for the subject site.
4. Include a description of utilities proposed to be installed (including proposed connections to the utility grid for this project) that are on or in the immediate vicinity of the site.
5. Include a description of a post closure use development's interface with the landfill's capping system, particularly where the installation will lie upon or penetrate the landfill cap.
6. A Health and Safety plan and contingency plan shall be developed for any post closure use project.
7. Include a current detailed drawing of the Landfill including delineated wetland edges, topography with stormwater control features, cap perimeter and construction details.
8. Any waste encountered during construction activities should be characterized and disposed of appropriately.
9. A description of proposed alterations to the existing landfill gas control system and safeguards employed to prevent landfill gas build-up beneath the liner and any potential subsurface - migration of landfill gas into confined structures, conduits and/or at the boundary line of the landfill should also be included. Said description shall address the requirements of *Solid Waste Regulation* 2.3.8 Gas control.
        A. The concentration of methane gas generated by the facility

does not exceed 25% of the lower explosive limit for methane in facility structures (excluding gas control or recovely system components).

B. The concentration of methane gas does not exceed 25% of the lower explosive limit for methane at the facility boundary line.

C. Ensure that methane gas monitoring is implemented for any enclosed structure, confined space or buried conduits that could cause buildup of flammable gases.

D. If methane gas levels exceeding the limits specified in paragraphs (a) and (b) of this section are detected, the facility must:

i. Immediately take all necessary steps to ensure protection of human health and notify the Department.

ii Within (7) days of detection place in the operating plan the methane gas levels detected, and a description of the steps taken to protect human health.

ii. Within (60) days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating plan, and notify the Department that the plan has been implemented. The Plan shall describe the nature and extent of the problem and the proposed remedy.

If you have any questions regarding this matter, please contact Robert Schmidt at (401) 222-2797 extension 7260 or by e-mail at Robert.schmidt@dem.ri.gov.

Authorized by,

Mark M. Dennen
Supervising Environmental Scientist

cc: Leo Hellested, Chief, OWM
Walid Ali, Robert Schmidt, Kasie McKenzie, OWM

APPENDIX 7
FRESHWATER WETLANDS IDENTIFICATION

Natural Resource Services, Inc.

Report of Findings for Freshwater Wetland Delineation

Stubtown Road
A.P. 13, Portion of Lot 27
Hopkinton, Rhode Island

Prepared for:

Steven Cabral, PE
Crossman Engineering
151 Centerville Road
Warwick, RI 02886

Report (NRS File No. 19-192) Prepared by:

Scott P. Rabideau, PWS
Principal

June 13, 2019

P.O. Box 311 Harrisville, RI 02830 401-568-7390 FAX 401-568-7490

Introduction

Natural Resource Services, Inc. (NRS) has completed its freshwater wetland delineations within a designated portion of the above-referenced parcel. This field work was performed in accordance with the delineation standards outlined in Appendix 2 of the Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act (250 RICR 150-15-1). Section 1.8(C)(4) of the wetland regulations states that all delineations performed by wetland consultants, including NRS, are not considered valid for regulatory purposes until the work is reviewed and approved by the RI Department of Environmental Management, Office of Water Resources (DEM, OWR).

NRS biologist Edward Avizinis, PWS, CPSS completed this field work on June 11, 2019. The regulatory section of this report will detail the classification of each wetland and the jurisdictional limits that may be applied to these features under the regulations.

Geographic Information System (GIS) graphics are included as appendices to this report. Wetland features were GPS located using a Trimble GeoXH 6000 handheld unit. GPS data has been overlain onto an accompanying GIS graphic for reference. Although this is not to be considered a survey, it is a reasonable approximation of the resource areas for preliminary planning purposes.

This report has been prepared in fulfillment of your authorization to proceed. Do not hesitate to contact NRS if you have any questions or if you require additional copies of this report.

Existing Conditions

The tax assessor's database for the Town of Hopkinton lists the subject property as an approximate 52-acre lot. The delineation performed by NRS focused on the areas surrounding the northwest corner of the lot. This portion of the parcel is comprised of upland and wetland features, including a cleared field area that is surrounded by forest. According to the DEM's Environmental Resource Map, the northernmost portion of the property lies within a Natural Heritage Area (Reference ID: 206).

A swamp occupies much of the wooded area surrounding the clearing. A stream flows within this swamp to the east of the clearing, entering the property along the road frontage by way of a culvert. This stream is an unnamed tributary to Canonchet Brook (Waterbody ID: RI0008040R-04A), which is an off-site perennial watercourse that the DEM recognizes as a cold water fishery. Additionally, there is a swamp located off-site to the north which was not flagged as part of this field work.

Soil Conditions

The Rhode Island Soil Survey (2018) approximates multiple soil series within the delineated portion of the subject lot. Soil units mapped within these areas include the Canton-Charlton-Rock outcrop complex, the Canton and Charlton fine sandy loams, very rocky, the

Ridgebury, Whitman and Leicester extremely stony fine sandy loams and the Freetown muck soil series. Of these map units, the Ridgebury, Whitman and Leicester and the Freetown muck series are considered to be hydric soils which are generally indicative of wetland features. The NRS findings were fairly consistent with the approximations of the soil survey.

Wetland Delineations

NRS has established and GPS located one (1) delineation flag series within the subject property. Pursuant to Section 1.7(A)(4)(b.4) of the regulations, the delineation of stream banks is not required. Instead, these watercourses will need to be survey located and accurately plotted on all site plans. NRS has approximated the centerline of the adjacent stream on the accompanying graphic for preliminary planning purposes.

NRS has established and GPS located one (1) delineation flag series within the subject property. Flagging labeled A1 – A85 depicts the boundary of a swamp. This swamp receives a 50-foot perimeter wetland under the regulations.

Jurisdictional Limits

The following table depicts each NRS flag series in relation to its classification under the DEM, OWR wetland regulations and any additional jurisdictional limits which may be required.

NRS Flag Series	DEM Classification	Jurisdictional Limits
A1 – A85	Swamp	50 ft. Perimeter Wetland
Not Flagged	Stream	100 ft. Riverbank Wetland
Not Flagged	Swamp (off-site)	50-foot Perimeter Wetland

The A-series and off-site swamp receive 50-foot perimeter wetlands. The stream receives a regulatory setback based on the mean width of the watercourse. As this feature is less than ten (10) feet in average width, it receives a 100-foot riverbank wetland.

It is important to note that perimeter and riverbank wetlands are considered to be regulated resource areas and not simple buffer zones. Any work which is contemplated within these regulatory setbacks shall require approval in the form of a permit from the DEM, OWR.

Summation

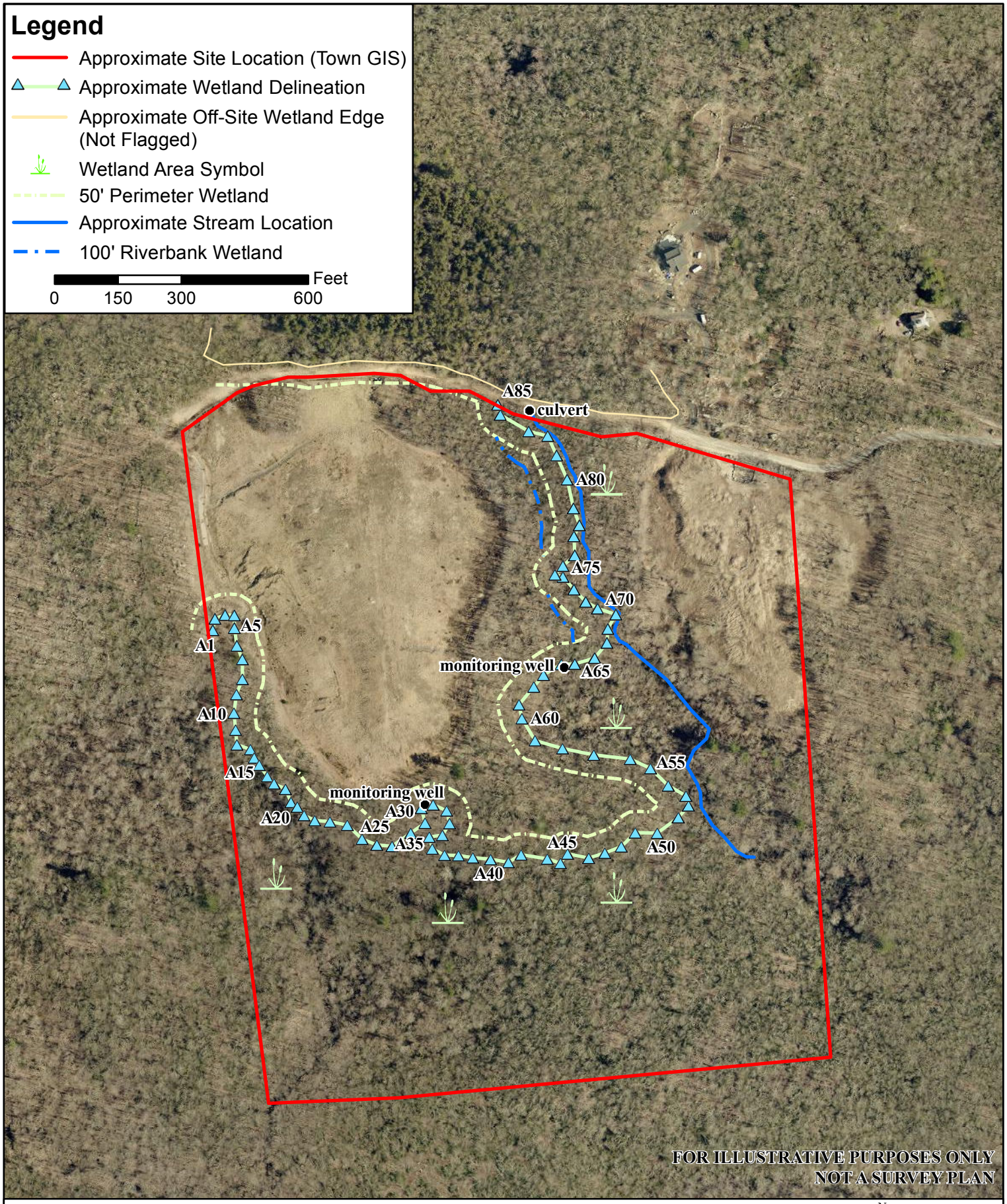
This report has been prepared to describe the field work performed by NRS. There are multiple regulated resource areas within the delineated portion of the subject lot. These resource areas include a swamp, an off-site wetland and a stream. These features receive additional jurisdictional limits as tabulated in the preceding section of this report. Any work proposed within these regulatory setbacks shall require a permit from the DEM, OWR.

It is also important to note that a new state freshwater wetlands law was enacted in July of 2015. This law made changes to the jurisdictional limits currently utilized in the regulations. The

DEM, OWR is writing new regulations which will require buffer zones for all freshwater wetlands. While a comprehensive timeline has not been established for the enactment of these rules, it is anticipated that they will be in effect at some point in 2019. If you submit an application prior to the promulgation of these rules, your project would then be grandfathered under the current setback standards.

Please do not hesitate to contact NRS if you have any questions or if you require elaboration on the findings of this report.

Appendix



Site Sketch Depicting Approximate Wetland Delineation
Stubtown Rd
A.P. 13, Portion of Lot 27

Hopkinton, RI

Performed by
Edward J. Avizinis, PWS, CPSS - 6/11/19
Located using hand-held Trimble GeoXH

N
W E
S

RIGIS

April 2018 aerial
RI DEM Mapping

Natural Resource Services, Inc.
PO Box 311
180 Tinkham Lane
Harrisville, RI 02830
p: (401) 568-7390
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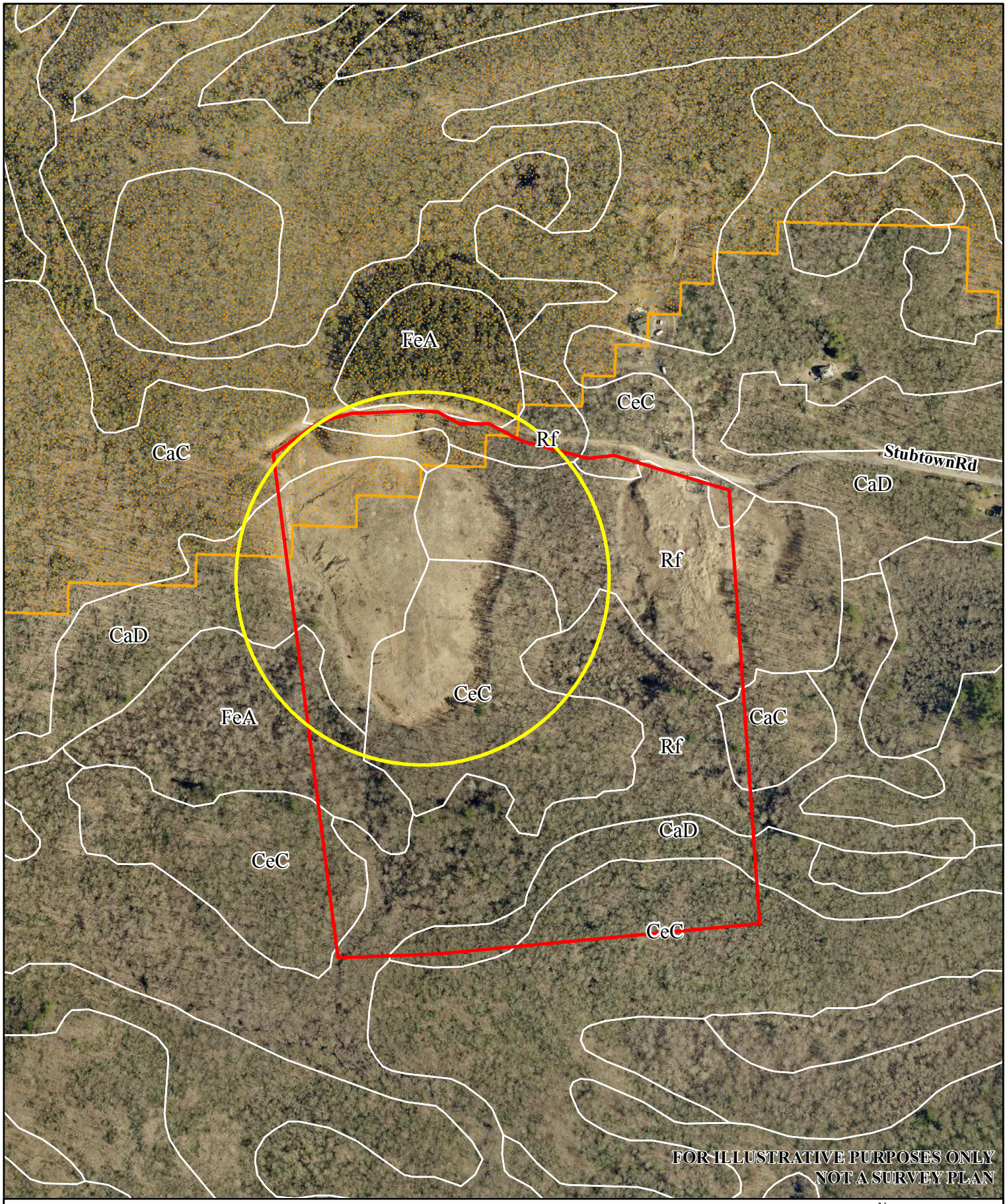
(c) RIGIS



USDA Soil Survey Map
Stubtown Rd
A.P. 13, Portion of Lot 27

Hopkinton, RI

Approximate Site Location
Approximate Project Location
NaturalHeritageArea

0 200 400 800 Feet

N W E S

RIGIS

April 2018 aerial
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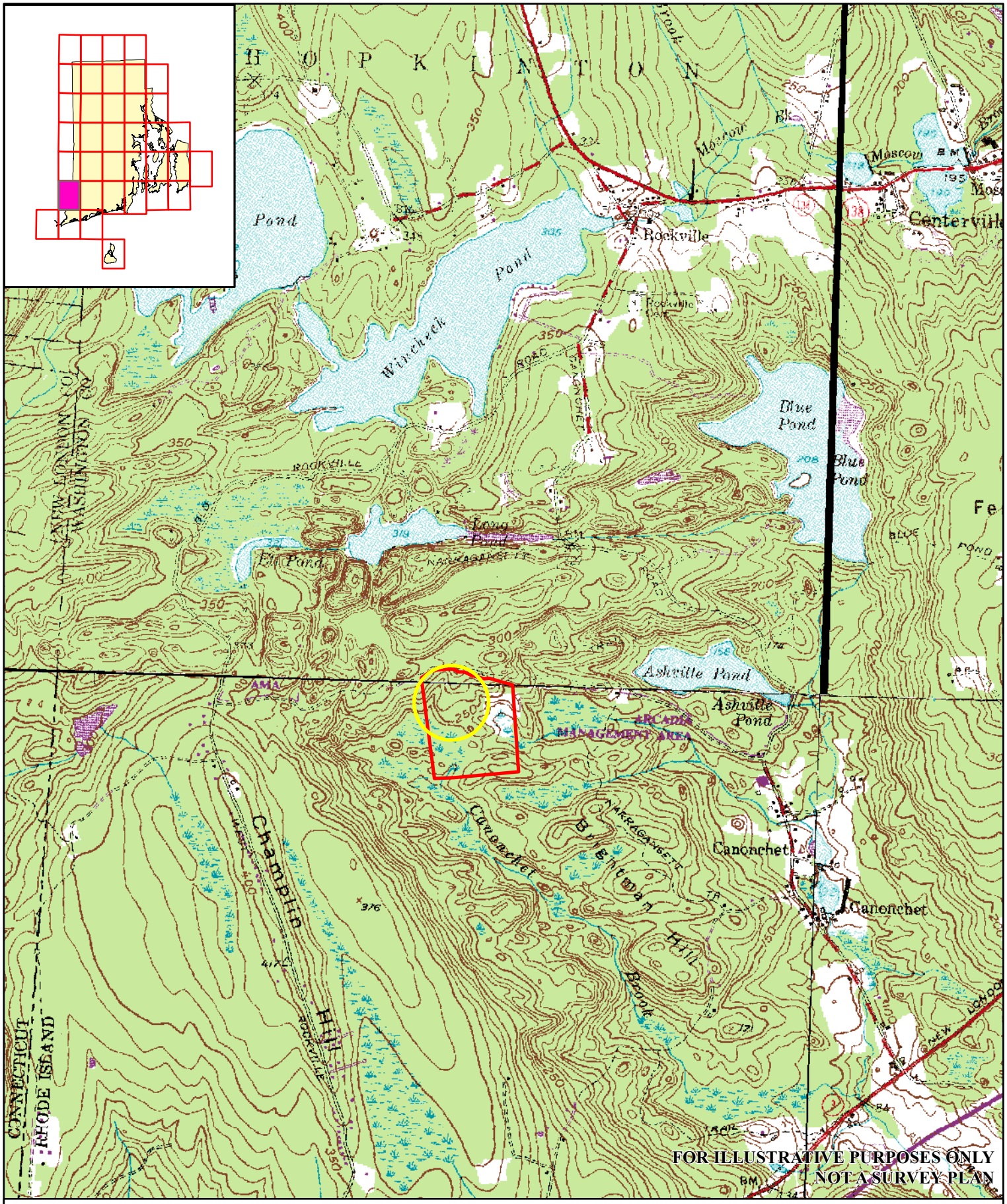

USGS Topographic Map
Stubtown Rd
A.P. 13, Portion of Lot 27

Hopkinton, RI

Ashaway Quad Map

Approximate Site Location
Approximate Project Location

USGS Topographic Series
Contour Interval 10 Feet
National Geodetic Vertical Datum of 1929

0 1,000 2,000 4,000 Feet

N W E S

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